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Abstract

Intervention on corpses as a mortuary practice has been reported in South America as early as 9000 BP (Strauss et al., 2015). In the region of the San Francisco River, in Argentine Northwest (NOA), complex forms of burial involving per mortem interventions on the body of the deceased have been reported in recent years. These complexes ritual cover all age classes and include defleshing, evisceration and selection of anatomical parts, associated with fire exposure practices on direct primary burials. The combination of different kinds of perimortem intervention and exposure to fire in direct primary burials seems to represent an idiosyncratic practice that has no parallel in other contemporary populations in Northwestern Argentina, and can therefore be considered a funerary tradition

Index terms—

1 Introduction

Intervention on corpses as a mortuary practice has been reported in South America as early as 9000 BP (Strauss et al., 2015). This custom has persisted over time in different groups, both in those of high-Andean tradition, and in coastal (Swenson, 2014) and lowland peoples -especially Amazonian (Neves et al., 2002; Solari et al., 2015). The peri/postmortem selection of anatomical parts, performed as a ritual sign during burial or as a way of assembling a 'burial package' for the purpose of transportation, has been recorded in regions as diverse as the Andes, the Andean foothills, the Chaco, or the Pampa and Patagonia in Argentina (Martínez et al. 2015). In some studies, these practices have been interpreted as complex forms of worshipping ancestors (Bloch & Parry 1982; Buikstra 1999; Aschero 2007a y b; Cremonte & Gheggi 2012); in others, they have been connected with the return to the final burial site, considering that a person's decease could have occurred away from their place of origin (Berón & Luna 2007; López Campeny et al. 2014). Amongst the diverse forms of treating the bodies, we have been able to record the selection and extraction of specific anatomical elements, as well as more complex practices such as defleshing, evisceration, bone cutting and exposure to fire.

In the Cuyo region in Argentina, there is ethnographic documentation referring to the existence of 'specialists', who were summoned at the moment of death to perform the treatment of the body, including the skeletonization process (Rosales, 1978, cited in Scabuzzo & Politis 2010). These specialists may not have been natives, having to leave their places of residence to provide their services. This implies that a comprehensive knowledge of human anatomy, as well as skills, physical strength and the use of appropriate tools were necessary to perform certain procedures on the bodies.

In the northwestern region of Argentina (NOA), manipulation of the bodies as part of mortuary treatment procedures can be traced back to the period of huntergatherers, with dates as early as 9600 BP (Fernández Distel, 1975; Fernández Distel, 2001). In the puna regions of Jujuy and Catamarca, there have been reports of amputated, burnt, re-deposited, transported and manipulated bodies in domestic contexts, which seems to point towards ancient rituals that connect numerous groups which inhabited different Andean regions (Fernández Distel, 2001; Aschero, 2007a, b). However, and due to a limited understanding of the archaeology of pre-Hispanic populations which occupied the foothill regions and eastern valleys, funerary practices were barely recorded or even completely unknown. In this regard, the research carried out during the last few years in the San Francisco valley region has begun to reveal complex funerary practices which involve significant perimortem interventions on the corpses before their final burial.

2 The Region of the San Francisco River Valley. Background Studies on Burial Practices.

Although research in the foothill region of the province of Jujuy started at the beginning of the twentieth century, little was known about burial practices until less than a decade ago. According to the limited sources previously available, the burial types included primary grave burials for sub-adults and direct primary :

Abstract-Intervention on corpses as a mortuary practice has been reported in South America as early as 9000 BP (Strauss et al., 2015). In the region of the San Francisco River, in Argentine Northwest (NOA), complex forms of burial involving per mortem interventions on the body of the deceased have been reported in recent years. These complexes ritual cover all age classes and include defleshing, evisceration and selection of anatomical parts, associated with fire exposure practices on direct primary burials. The combination of different kinds of perimortem intervention and exposure to fire in direct primary burials seems to represent an idiosyncratic practice that has no parallel in other contemporary populations in Northwestern Argentina, and can therefore be considered a funerary tradition. (Seldes & Ortiz, 2009). From that moment, and due to the progress made in research, there has been an increase in the number of studies and the understanding of the funerary procedures performed by II.

3 Materials and Methods

The analyzed sample comes from an archaeological site which has been under study since 2009. Pozo de la Chola is located on the valley bottom of the foothill region in Jujuy, Argentina (24°06'56"S, 64°42'59"W; Figure ??). The site, placed on one of San Francisco river terraces, is only partially preserved due to a significant seasonal rise in the river level which largely destroyed it two decades ago. The Chaco serrano vegetation dominates the whole valley bottom, while higher on the hillsides, species typical of the Yungas or mountain rainforests become progressively more common. The average altitude is 650 MASL. A distributional prospection consisting of many boreholes has allowed us to estimate the extension of the preserved area at 2 hectares; the calculation is approximate because the environmental and cultural characteristics of the archaeological sites reduce visibility to zero (Ortiz et al., 2015). On the basis of its pottery materiality, the site has been assigned to what has been called the "San Francisco Tradition" (sensu Dougherty, 1975), considered to be one of the earliest agro-pottery traditions in Northwestern Argentina. Up to now, the excavated area represents 105m², and it has been distributed in three sectors (A; B; C). Direct primary burials, partial remains of a secondary burial and anatomical parts, selected and arranged over occupational floors or inside a large basin hearth, have been recorded in all three sectors (Ortiz & Nieva, 2014a). Radiocarbon dating performed on eight occasions on some burial skeletal remains and over floor carbon samples have revealed a long period of occupation spanning from the beginning of the era until 500 AD (Ortiz & Nieva, 2014; Ortiz et al., 2017).

Due to the differing exhumation conditions and to the cultural practices associated to the treatment of corpses, many skeletons were found fragmented or incomplete; consequently, it was necessary to perform reconstruction and conservation tasks. The sediments basic pH, along with the immediate burial of the remains, account for the outstanding state of conservation, even in sub-adult individuals.

The assessment of the sample composition started with the reassembly and continued with a distributional analysis of the skeletal remains and the associated context features and a close observation of alteration signs by means of hand lenses and binoculars. Age was calculated on the basis of the synostosis shown by the main ossification centers, the measurement of maximum length in long bones and the root dentine translucency in premolars, as well as through assessing the dental formation and calcification processes (Lamendin et al., 1992; Esponda Vila, 1994; Ubelaker, 1999; Scheuer & Black, 2000).

The minimum number of individuals (MNI) was 36. Eleven of the individuals were sub-adults and twenty-five, adults. Categorization of sub-adults through age intervals followed the criteria proposed by Bogin (1988) and Lewis (2007): 1. perinate: around birth to 3 months of age; 2. infant: 4 months of age to 2.9 years; 3. child: 3 to 6.9 years; and 4. juvenile: 7 to 12.9 years. In adults: adults (20-40 years), mature adults (40-60 years) and senile (older than 60 years of age).

Sexing was carried out following the criteria proposed by Bass (2005) and Buikstra & Ubelaker (1994), based on the morphological analysis of pelvic structures.

Signs of peri and postmortem manipulation, specifically of impact and cut marks, were taken as evidence for the assessment of anthropic intervention on the bodies, following the criteria proposed by Pijoan & Pastrana (1987), Botella López (2005), Spencer (2007) and Solari Giachino (2010). These take into consideration direct or indirect cut marks, type of cut (by attrition, percussion, tension, twisting and levering), anatomical location, shape of the transverse section, depth, size, orientation and color, as well as the practices connected to each of them (skinning, defleshing and disarticulation). Shades of color, localization and changes in the external surface were observed according to the criteria provided by Holck (2008), Pijoan et al. (2008) and Stodder (2008), with the aim of recording thermal alteration. and grave goods were very inaccurate and vague, while bioarchaeological analyses were only concerned with age group identification and, occasionally, with sexing (Dougherty, 1975). It was not until the year 2009 that some of the burials recovered from the region were recorded and analyzed systematically for the first time burials for adults (Nordenskiöld, 1903; Boman, 1908; Dougherty, 1975). The descriptions of finding contexts populations called 'San Francisco' (Ortiz & Nieva, 2014a y b;). Some of these

107 practices included preparations for the final burial which involved perimortem intervention, whereas others did
108 not show signs of such treatment of corpses. Numerous anthropic interventions were found on the bodies, typical
109 of different mortuary practices, which involved skeletonization process, evisceration, selection of anatomical parts
110 and cremation in burial graves.

111 4 Contexts under Study

112 Sector A: at the moment, the total excavated area is 58m², where 25 individuals (MNI) have been recovered: 4
113 complete and 21 incomplete. Two of the complete individuals are sub-adults; the other two are adults recovered
114 from two primary grave burials. One of the adults was found extended, in supine position and the other one, in
115 sitting position. Both sub-adults were buried in extended, supine position. Other incomplete remains were found
116 on the occupational floors and showed no clear signs of burial; only one secondary burial was recorded: some
117 lower extremities bones from an adult individual were placed inside a pit delimited by large fragments of ceramic
118 vessels and rounded stones (Table ??, Figure ??a). The incomplete sub-adults remains belong to the cranium,
119 while the post-cranial skeleton has not been found. In some cases, there is evidence of exposure to fire: one of
120 the bodies revealed that it had been burnt inside the grave (Table ??; Ortiz et al., 2017). Incomplete remains
121 were recovered from inside a large basin hearth; some of them -foot bones corresponded to an adult, and others
122 -cranial remains -belonged to two sub-adults (Table ??). Only one male adult was found with a smoking pipe
123 fragment placed between his legs, in the manner of grave goods. Cut marks were visible in both the parietal
124 bones of the subadult individual burnt inside the grave and in the isolated cranial vault of another sub-adult,
125 which also showed signs of thermal alteration (Ortiz et al., 2017).

126 Sector B: Two of the three different locations where excavations were carried out resulted in the discovery of
127 inhumation burials. The first excavation covered an area of 9m² and the second, 8m². One of the excavated
128 sections corresponds to an exclusive burial zone; the other seems to belong to a low-density waste area where an
129 adult was buried. In the first section, 4 complete individuals (3 adults and 1 sub-adult), together with incomplete
130 remains of 2 other sub-adults, were exhumed. The burials of adults were direct primary burials, where the bodies
131 lay in extended supine position, whereas one of the sub adults was found in bent lateral decubitus position (Ortiz
132 et al., 2017). Two of the adult burials presented ceramic objects as grave goods. A ring-shaped ceramic vessel was
133 located approximately 0.5 meters away from all burials; consequently, it could not be assigned to any of them in
134 particular ??Ortiz, 2013). Three of the adult individuals showed cut marks and signs of thermal alteration (Table
135 ??, Figure ??b y c). In the second section, a primary grave burial was excavated, where an adult individual lay
136 in extended supine position, with overlapping lower limbs. It did not show any signs of perimortem intervention.

137 Sector C: This sector corresponds to another exclusive burial zone. The total area excavated is 14m², where
138 three burials were recovered: two belonging to adults and one to a sub-adult (Table ??). All of them were
139 characterized as primary burials: an adult and a subadult were found in extended, supine position, while the
140 other adult was found in sitting position. The sub-adult individual shows many cut marks (Figure ??d). Volume
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143 6 Results

144 Due to the fact that most skeletal remains are incomplete, the total estimates of perimortem interventions are
145 only partially representative. Over a total of 36 individuals, a significant percentage of the sample shows signs
146 of diverse types of interventions (Figure ??a). Likewise, if we analyze age groups separately, there is evidence of
147 interventions performed on the bodies of both adults and sub-adults (Table ?? and Figure ??b). As regards age
148 groups, these practices have been more regularly observed in adults; considering the size of the sample, however,
149 the percentage is still high in sub-adults. The most frequent intervention practice is exposure to fire, followed by
150 marks of actions involving skeleton cleaning or defleshing (Figure ??c).

151 The characteristics shown by the marks, as well as their anatomic location and the absence of disarticulation
152 in primary burials are indicators of manipulations connected to defleshing before the body was deposited in the
153 burial grave, and in some cases, of subsequent exposure to sources of heat. Manipulation of human remains has
154 been very frequently interpreted as evidence of cannibalism (Turner, 1983; ?i?joan, 2014; White, 1992). Although
155 there is no absolute consensus among them, most (2015) -point towards interpreting them as mortuary ritual
156 practices -a hypothesis further supported by the fact that the forms of inhumation reveal, in most cases, primary
157 burials.

158 Diversity in the forms of disposing the bodies cannot be explained as changes in the funerary customs
159 throughout time: the radiocarbon dating obtained in different sites showed that some burials are contemporary
160 with one another. Radiocarbon datings performed on two sub-adult individuals and on two adults revealed both
161 diachronic and synchronic burial practices (Table ??). The episodes with the most similar datings showed that
162 the ways of burying sub-adults did not differ from that of adults. In both cases, primary grave burial was the
163 most common form of inhumation, and, in general, they did not present (non-perishable) grave goods. Some
164 skeletal remains have been subjected to rituals involving fire; in some cases, in combination with a skeletonization
165 perimortem process. researchers agree about considering the existence of thermal alteration, cut marks, brain
166 exposure and isolated skeletal remains in cases of unique burials, as good indicators of such a practice. However,

167 even when these signs are observed in the analyzed sample, they show neither co-occurrence nor intra-sample
168 regularity. Neither are human bones mixed with animal bones, nor scattered on the floor without anatomical
169 association. As for the remains which were found incomplete, they generally represent an intentional selection of
170 specific anatomical parts.

171 In the light of all this evidence, we would like to propose that the societies under study performed formalized
172 and specific rituals immediately after a person's death or even after the exequies. The data obtained from material
173 imprints left by mortuary rituals revealed complex forms of treatment of the deceased, which involved significant
174 corpse manipulation. Considering the fact that a high number of primary burials have undergone important
175 perimortem interventions, the presence of isolated or incomplete skeletal remains in places which do not seem to
176 be final burial sites can be interpreted either as similar inhumation practices, in which the remains were removed
177 from their original burial sites for later redeposition, or as other forms of ritual signs towards skeletal remains
178 which had not been subject to primary burials.

179 On the basis of the recurrence of similar practices on different individuals and age groups, we set forth the
180 existence of complex mortuary rituals that have no connection to instances of violence or cannibalism. The lack
181 of clear indicators of anthropophagic practices proposed by other researchers -e.g. fractures, blunt force traumas,
182 avulsions and medullary canal alterations (Solari et al., Other individuals' remains may have played the role of
183 relics, as they have been preserved and manipulated in domestic contexts (Ortiz 2013a). This practice appears
184 to have been more frequent with subadult skeletal remains, as shown by the majority of the anatomical parts
185 found on archaeological floors, incomplete and without evidence of final burial, which mostly belong to cranial
186 remains of infants or children. Other bodies, found in primary burials and evidencing anatomical connection,
187 were subjected to numerous interventions, including defleshing, evisceration and scraping. Finally, the presence
188 of bones on the inside of hearths has proven to be the most elusive mortuary practice.

189 Therefore, we would like to propose that, like elsewhere in South America, the human body was used in
190 specific mortuary rituals as a way of reifying and expressing cosmological principles related to death (Strauss
191 et al., 2011). Even though, until now, there was no evidence of social asymmetry found ??Ortiz, 2013b), the
192 selective treatment that only some individuals received may bring to light social inequalities which are not visible
193 in other material aspects (Ortiz 2013a).

194 Although in this study we have only analyzed data obtained in Pozo de la Chola, burials involving the same
195 forms of intervention on the bodies were found in other contemporary archaeological sites of the region. This
196 allows us to assert that we are in the presence of an extended cultural practice in these populations.

197 Finally, we would like to emphasize that the combination of different kinds of perimortem intervention and
198 exposure to fire in direct primary burials seems to represent an idiosyncratic practice that has no parallel in other
199 contemporary populations in Northwestern Argentina, and can therefore be considered a funerary tradition.

200 Un cráneo del norte de Patagonia con modificaciones post mórtem. Aproximación mediante técnicas no
201 invasivas. *Intersecciones en Antropología* 12: 349-354.

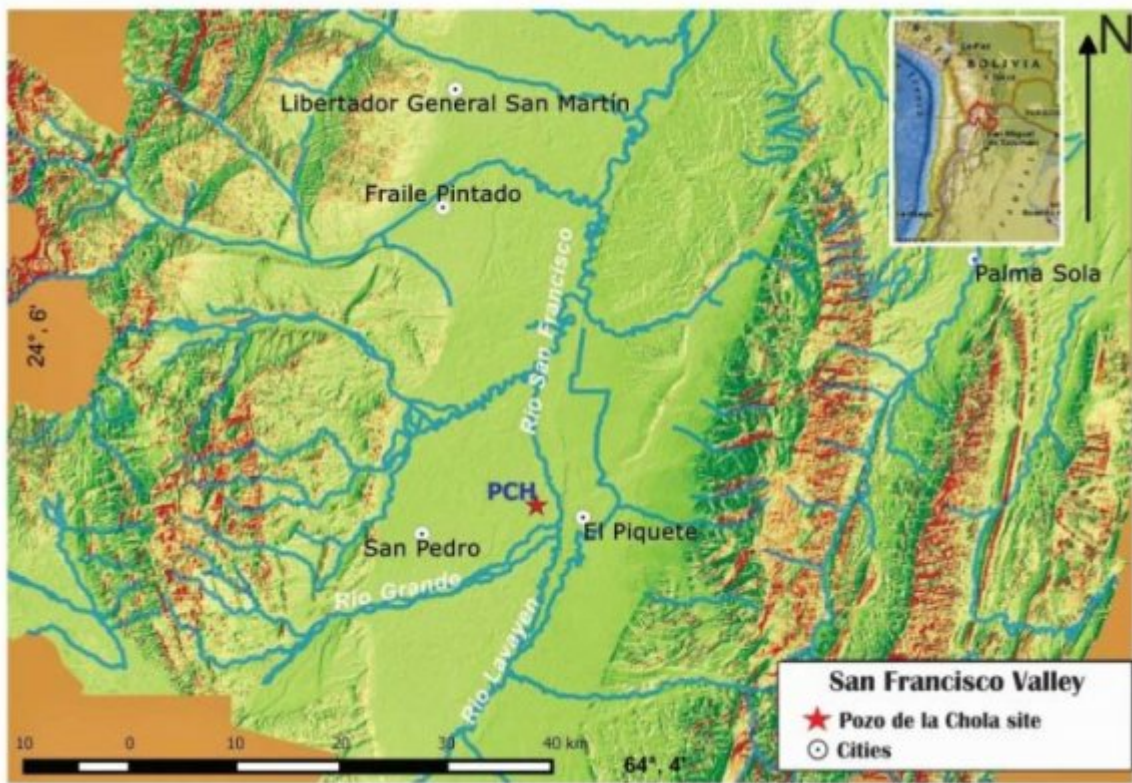


Figure 1:

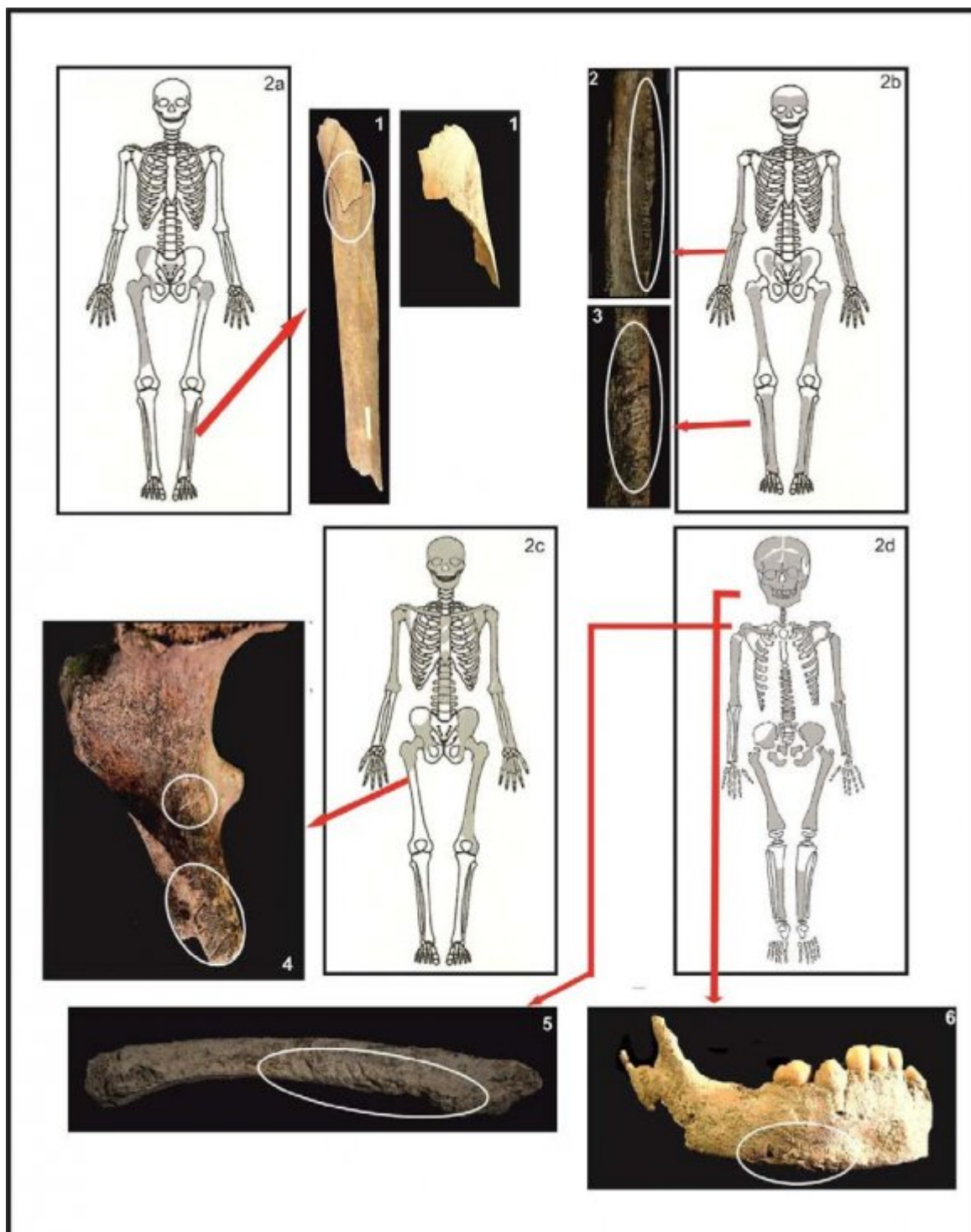


Figure 2:

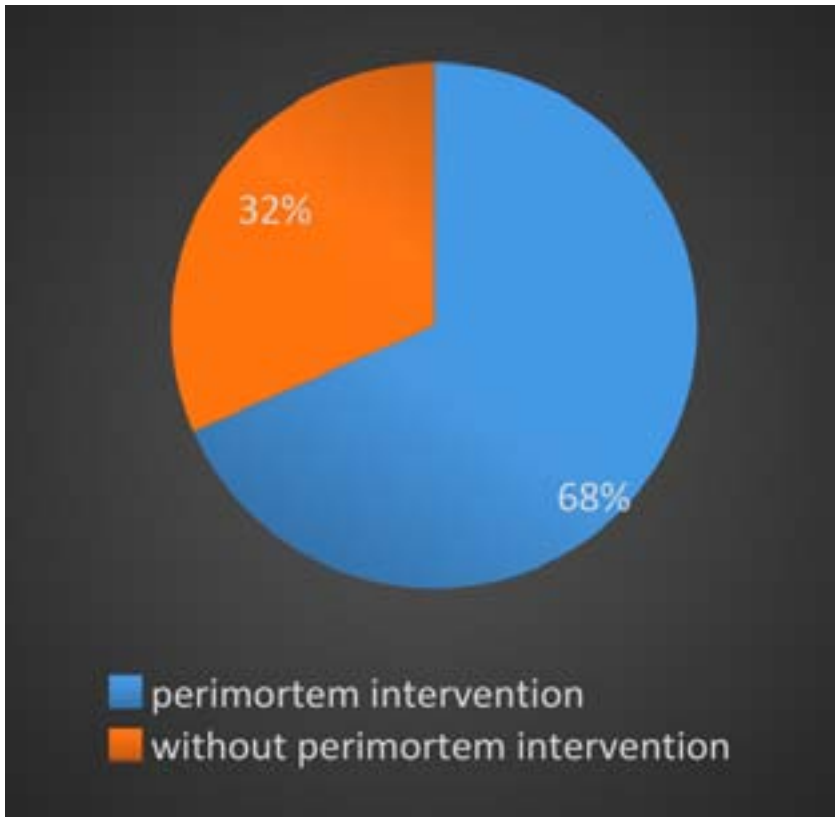


Figure 3:

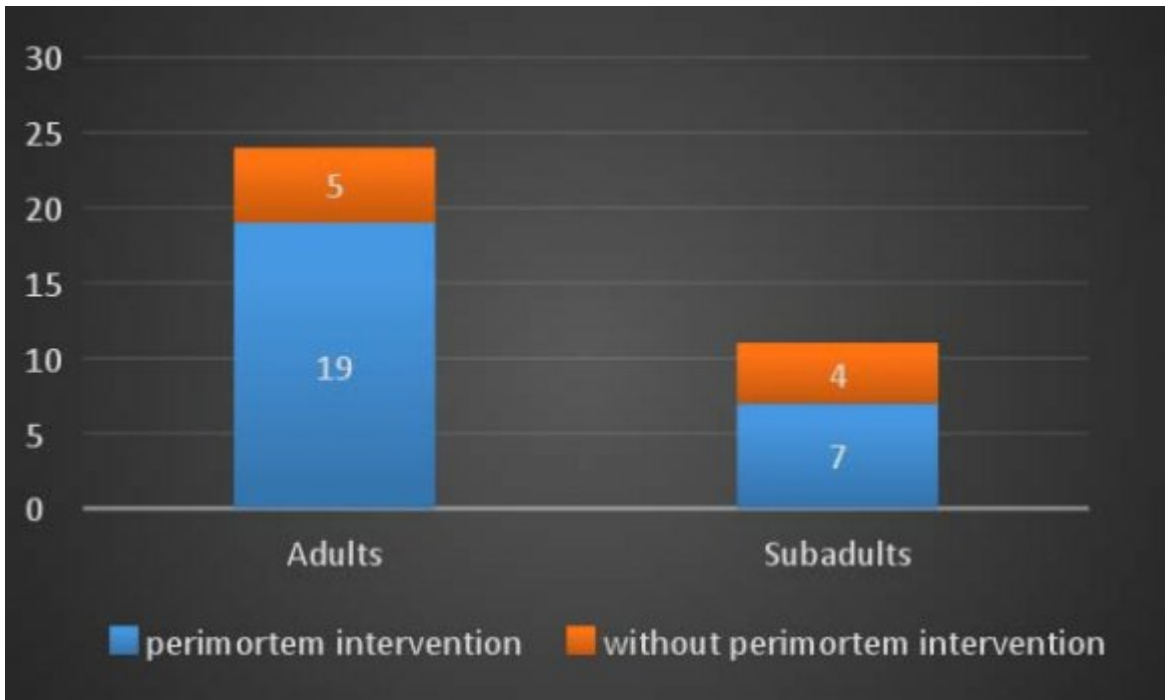


Figure 4: Figura

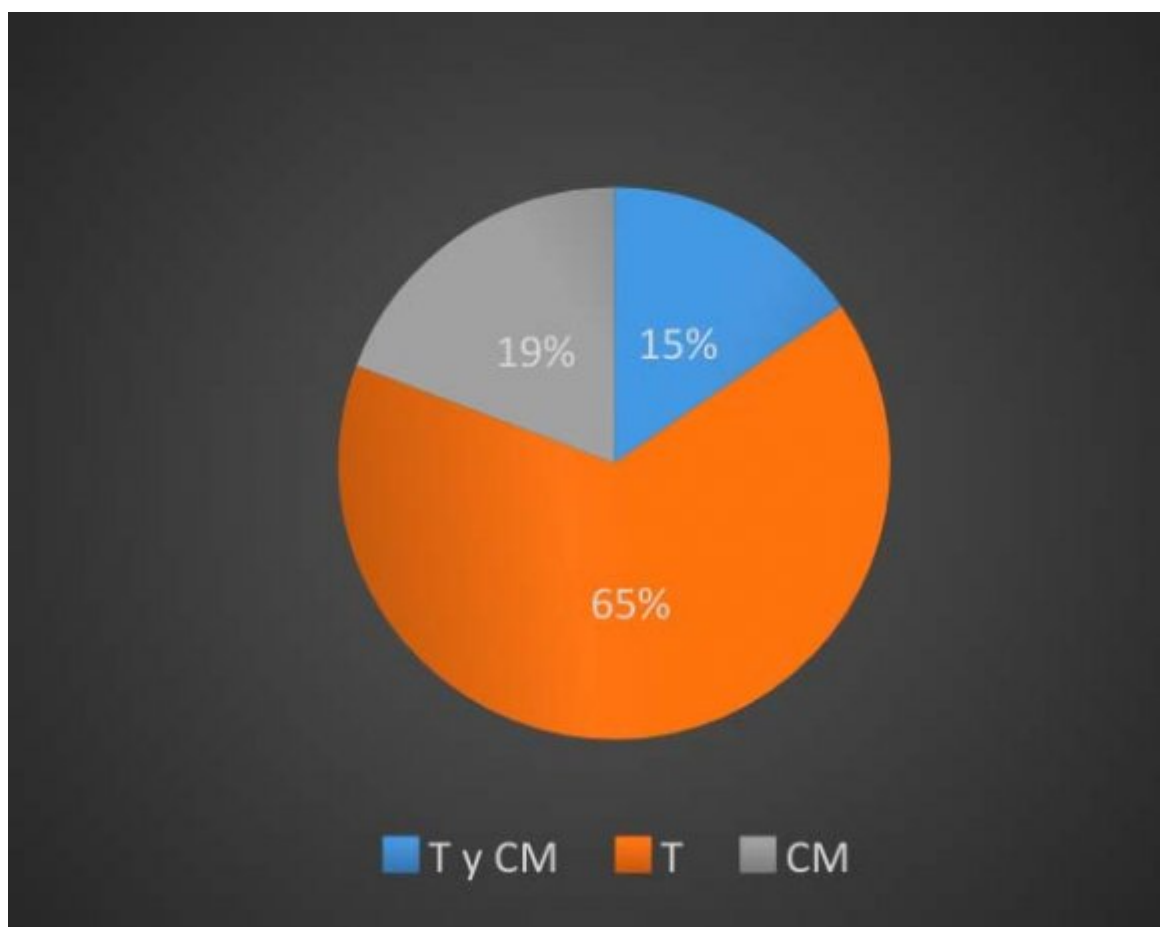


Figure 5:

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