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# Mortuary Rituals and *Perimortem* Interventions. Complex Burials at the Pozo De La Chola Site, Foothill Region in Jujuy, Northwestern Argentina (2000-1500 BP)

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## I. 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., 2006; Berón & Luna, 2007; Del Papa et al., 2011; Ortiz & Nieva, 2014a; Desántolo et al., n/d). In some studies, these practices have been interpreted as complex forms of worshiping 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 hunter-gatherers, 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.

*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

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burials for adults (Nordenskiöld, 1903; Boman, 1908; Dougherty, 1975). The descriptions of finding contexts 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 (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 populations called 'San Francisco' (Ortiz & Nieva, 2014a y b;). Some of these practices included preparations for the final burial which involved *perimortem* intervention, whereas others did not show signs of such treatment of corpses. Numerous anthropic interventions were found on the bodies, typical of different mortuary practices, which involved skeletonization process, evisceration, selection of anatomical parts and cremation in burial graves.

## II. 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 1). 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 105m<sup>2</sup>, 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.

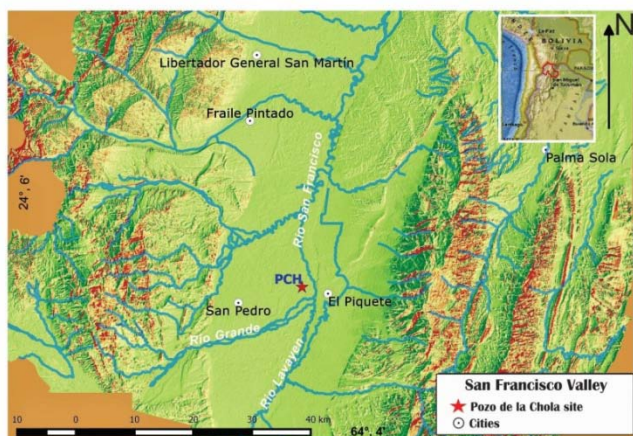


Figure 1

a) Contexts under Study

Sector A: at the moment, the total excavated area is 58m<sup>2</sup>, where 25 individuals (MNI) have been recovered: 4 complete and 21 incomplete. Two of the complete individuals are sub-adults; the other two are adults recovered from two primary grave burials. One of the adults was found extended, in supine position and the other one, in sitting position. Both sub-adults were buried in extended, supine position. Other incomplete remains were found on the occupational floors and showed no clear signs of burial; only one secondary burial was recorded: some lower extremities bones from an adult individual were placed inside a pit delimited by large fragments of ceramic vessels and rounded stones (Table 1, Figure 2a). The incomplete sub-adults remains belong to the cranium, while the post-cranial skeleton has not been found. In some cases, there is evidence of exposure to fire: one of the bodies revealed that it had been burnt inside the grave (Table 1; Ortiz et al., 2017). Incomplete remains were recovered from inside a large basin hearth; some of them – foot bones – corresponded to an adult, and others – cranial remains – belonged to two sub-adults (Table 1). Only one male adult was found with a smoking pipe fragment placed between his legs, in the manner of grave goods. Cut marks were visible in both the parietal bones of the sub-adult individual burnt inside the grave and in the isolated cranial vault of another sub-adult, which also showed signs of thermal alteration (Ortiz et al., 2017).

Sector B: Two of the three different locations where excavations were carried out resulted in the discovery of inhumation burials. The first excavation covered an area of 9m<sup>2</sup> and the second, 8m<sup>2</sup>. One of the excavated sections corresponds to an exclusive burial zone; the other seems to belong to a low-density waste area where an adult was buried. In the first section, 4 complete individuals (3 adults and 1 sub-adult), together with incomplete remains of 2 other sub-adults, were exhumed. The burials of adults were direct primary burials, where the bodies lay in extended supine

position, whereas one of the sub adults was found in bent lateral decubitus position (Ortiz et al., 2017). Two of the adult burials presented ceramic objects as grave goods. A ring-shaped ceramic vessel was located approximately 0.5 meters away from all burials; consequently, it could not be assigned to any of them in particular (Ortiz, 2013). Three of the adult individuals showed cut marks and signs of thermal alteration (Table 1, Figure 2b y c). In the second section, a primary grave burial was excavated, where an adult individual lay in extended supine position, with overlapping lower limbs. It did not show any signs of *perimortem* intervention.

Sector C: This sector corresponds to another exclusive burial zone. The total area excavated is 14m<sup>2</sup>, where three burials were recovered: two belonging to adults and one to a sub-adult (Table 1). All of them were characterized as primary burials: an adult and a sub-adult were found in extended, supine position, while the other adult was found in sitting position. The sub-adult individual shows many cut marks (Figure 2d).





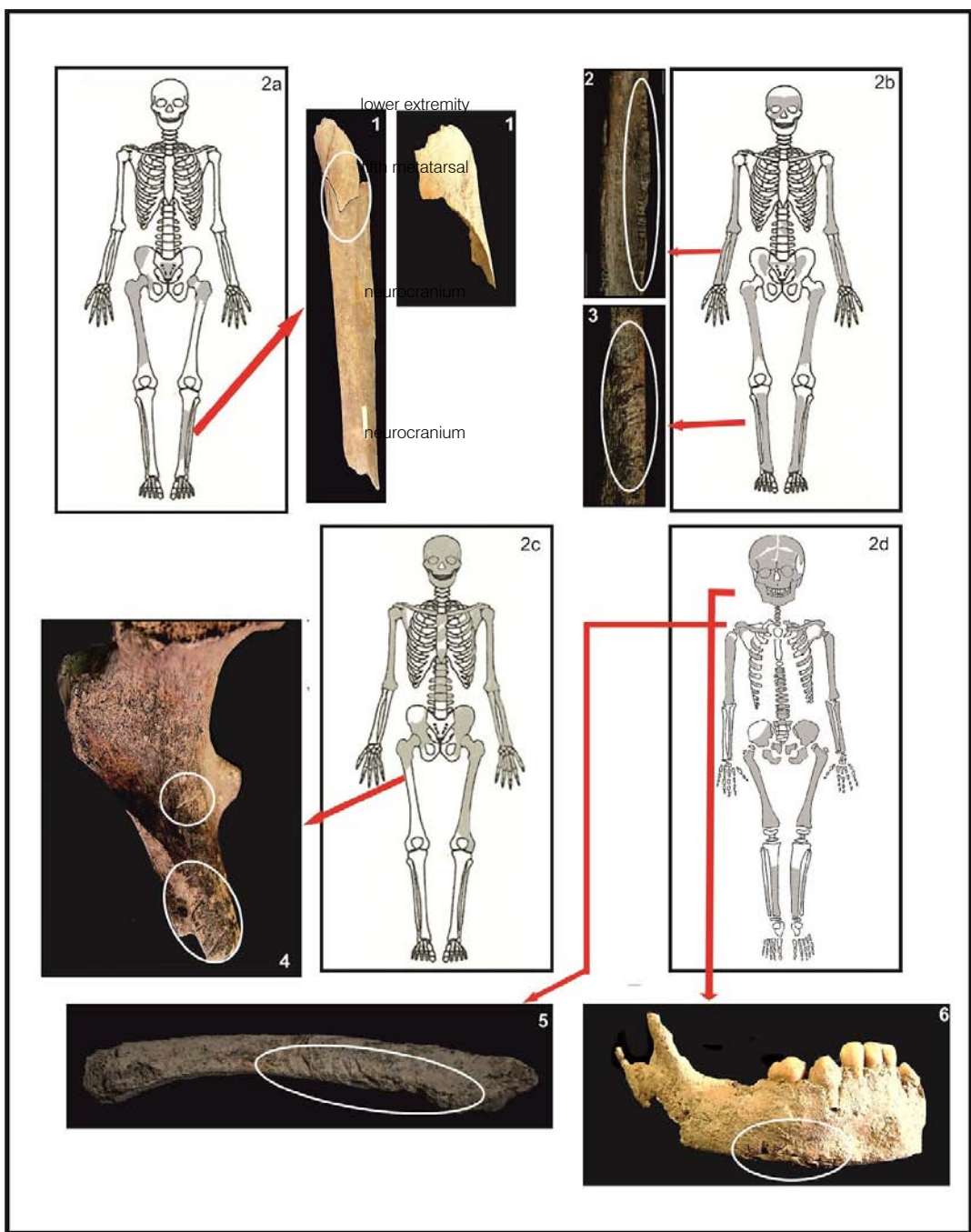


Figure 2

Sector	Indiv	Condition	Cut-marks		Linkedaction	Cut-markslength/ type of fracture	Section	Location	Pattern	Morphology	Age	Sex	Thermosetting	Dating (year BP)	Context
			Cutbone	Overthesurface											
A	1	complete		x	defleshing	range 9mm- 15mm long	v	lower extremity	scattered	transversal - longitudinal	adult	Male	x		burialpit
A	2	incomplete	x	x	fracture/ defleshing	4 mm long Spiral	v	fifth metatarsal		helicoidal and transversal	adult				burialpit
A	3	incomplete		x	defleshing	4 mm	v	neurocranium		transversal	adult		x	2030 ±50 BP	traybonfire

Table 1

Sector	Indiv.	Condition	Cut-marks		Linked action	Cut-marks Length/type of fracture	Section	Location	Pattern	Morphology	Age	Sex	Thermosetting	Dating (year BP)	Context
			Cut bone	Over the surface											
A	1	complete		x	defleshing	range 9mm-15mm long	v	neurocranium	scattered	transversal - longitudinal	adult	Male	x		burial pit
A	2	incomplete	x		fracture/defleshing	4 mm long Spiral	v	lower extremity	grouped	helicoidal and transversal	adult				burial pit
A	3	incomplete		x	defleshing	4 mm	v	fifth metatarsal	grouped/scattered	transversal	adult		x	2030±50 BP	tray bonfire
A	4	complete									adult	Male			burial pit
A	5	complete		x	defleshing	range 1,2 mm - 7,3 mm long	v	neurocranium	grouped	transversal - longitudinal	1 year ± 4 months		x	2030±80 BP	burial pit
A	6	incomplete									adult		x		floor
A	7	incomplete									6 year ± 1 year		x		floor
A	8	incomplete		x	defleshing	2,2,4 mm	v	neurocranium	grouped	transversal-longitudinal	sub-adult		x		floor
A	9	incomplete									adult		x		floor
A	10	incomplete									adult		x		burial pit
A	11	incomplete									adult		x		burial pit
A	12	incomplete									adult		x		burial pit
A	13	incomplete									adult		x		floor
A	14	incomplete									adult		x		floor
A	15	incomplete									adult		x		floor
A	16	incomplete									adult		x		floor
A	17	incomplete									adult		x		floor
A	18	incomplete									adult				floor
A	19	incomplete									adult		x		floor
A	20	incomplete									adult		x		floor
A	21	incomplete									4 year ± 1 year				tray bonfire
A	22	complete									6 year ± 1 year		x		tray bonfire
A	23	complete									9 year ± 1 year				burial pit

A	24	incomplete																		tray bonfire	
A	25	incomplete																		floor	
B	26	Complete	x	defleshing	range 10mm-2mm long	v	Neurocranium left humerus; left ulna; left radius; right ulna; right radius; left femur; right femur; right tibia; right fibula	grouped	transversal/longitudinal	adult	female									1710±70 BP	burial pit
B	27	complete	x	defleshing	range 5mm-11mm long	v	right femur	scattered	transversal	adult	male									1930 ± 60 AP	burial pit
B	28	complete	x	evisceration	range 8mm-20mm long	v	right iliac	grouped	transversal/longitudinal	adult	male										burial pit
B	29	complete								3 year ± 1 year											burial pit
B	30	incomplete								5 month ± 3month									x		burial pit
B	31	complete								adult	male										burial pit
B	32	incomplete								adult									x		rescue
B	33	incomplete								adult											rescue
C	34	complete	x	Defleshing	range 1.2 mm - 1.7 mm long	v	lower jaw; clavicle	grouped	transversal	14 month ± 2 month											burial pit
C	35	complete								adult	female										burial pit
C	36	complete								adult	female										burial pit

### III. RESULTS

Due to the fact that most skeletal remains are incomplete, the total estimates of *perimortem* interventions are only partially representative. Over a total of 36 individuals, a significant percentage of the sample shows signs of diverse types of interventions (Figure 3a). Likewise, if we analyze age groups separately, there is evidence of interventions performed on the bodies of both adults and sub-adults (Table 1 and Figure 3b). As regards age groups, these practices have been more regularly observed in adults; considering the size of the sample, however, the

percentage is still high in sub-adults. The most frequent intervention practice is exposure to fire, followed by marks of actions involving skeleton cleaning or defleshing (Figure 3c).

The characteristics shown by the marks, as well as their anatomic location and the absence of disarticulation in primary burials are indicators of manipulations connected to defleshing before the body was deposited in the burial grave, and in some cases, of subsequent exposure to sources of heat.

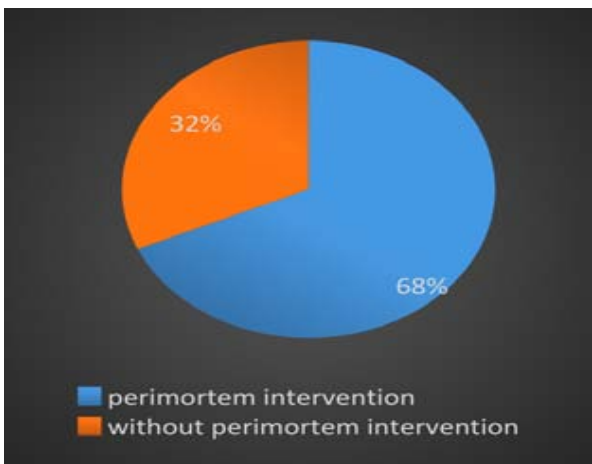


Figura 3 a.

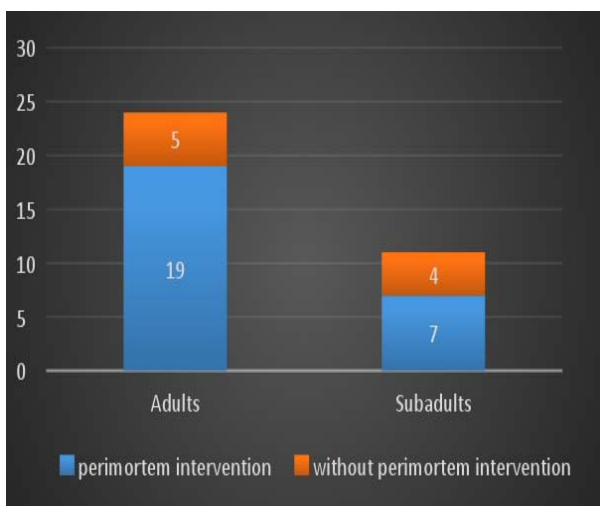


Figura 3b

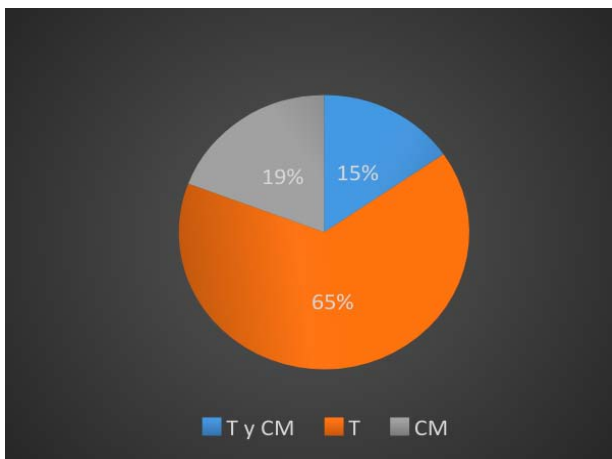


Figura 3c

a) Final Words

Manipulation of human remains has been very frequently interpreted as evidence of cannibalism (Turner, 1983; Pijoan, 2014; White, 1992). Although there is no absolute consensus among them, most

researchers agree about considering the existence of thermal alteration, cut marks, brain exposure and isolated skeletal remains in cases of unique burials, as good indicators of such a practice. However, even when these signs are observed in the analyzed sample, they show neither co-occurrence nor intra-sample regularity. Neither are human bones mixed with animal bones, nor scattered on the floor without anatomical association. As for the remains which were found incomplete, they generally represent an intentional selection of specific anatomical parts.

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

On the basis of the recurrence of similar practices on different individuals and age groups, we set forth the existence of complex mortuary rituals that have no connection to instances of violence or cannibalism. The lack of clear indicators of anthropophagic practices proposed by other researchers – e.g. fractures, blunt force traumas, avulsions and medullary canal alterations (Solari et al., 2015) – point towards interpreting them as mortuary ritual practices – a hypothesis further supported by the fact that the forms of inhumation reveal, in most cases, primary burials.

Diversity in the forms of disposing the bodies cannot be explained as changes in the funerary customs throughout time: the radiocarbon dating obtained in different sites showed that some burials are contemporary with one another. Radiocarbon datings performed on two sub-adult individuals and on two adults revealed both diachronic and synchronic burial practices (Table 1). The episodes with the most similar datings showed that the ways of burying sub-adults did not differ from that of adults. In both cases, primary grave burial was the most common form of inhumation, and, in general, they did not present (non-perishable) grave goods. Some skeletal remains have been subjected to rituals involving fire; in some cases, in combination with a skeletonization *perimortem* process.

Other individuals' remains may have played the role of relics, as they have been preserved and



manipulated in domestic contexts (Ortiz 2013a). This practice appears to have been more frequent with sub-adult skeletal remains, as shown by the majority of the anatomical parts found on archaeological floors, incomplete and without evidence of final burial, which mostly belong to cranial remains of infants or children. Other bodies, found in primary burials and evidencing anatomical connection, were subjected to numerous interventions, including defleshing, evisceration and scraping. Finally, the presence of bones on the inside of hearths has proven to be the most elusive mortuary practice.

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

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

Finally, we would like to emphasize that 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*.

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