



# **The lithic hoard of hypogeum of Colos (Abrantes, Middle Tagus Valley-Portugal): shadows of rituals**

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## **ABSTRACT:**

In this paper we are presenting the use-wear traces study of some Lithic artefacts from a cinerary funerary context of Colos. This funerary monument is a hypogea dug in a hillock of a pour quality granite. Culturally it is part of the Megalithic period, chronologically covering the Final Neolithic and the Chalcolithic.

The lithic assemblage found in Colos has a very important symbolic value; in the hoard there are big lithic artefacts made in exotic raw material. Which means they were produced by specialized artisans and the exotic character of the raw-material used induce to hypothesize the presence of long-range commerce. The study of the use-wear traces of this lithic assemblage could clarify the funerary rituals and practices. The main queston of this paper is: these artefacts were prepared only to offer the deceased, or they were used on daily life tasks?

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**KEYWORDS:** *Chalcolithic, Mid Tagus Valley, Funerary ritual, Use-wear analysis, Grave Goods.*

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## 1. INTRODUCTION

The funerary monument of Colos (São Facundo, Abrantes-Portugal) is located at central Portugal in the southern edge of Tagus river basin. Álvaro Batista (Gaspar, Batista 2000), archaeologist technician of Municipality of Abrantes, has excavated this monument in 2000. The structure was embedded into a big granitic outcrop. The prehistoric communities took advantage of this outcrop preparing in itself small funerary chamber. This monument can be considered as a indirect cinerary place, where was deposited a rich asset with: vessels, flint lithic industry and polished stone axes. A study on the assets showed a specific relationship between the ideology of this communities' and the megalithic ones, very common all over Portugal. However, its particular architectural features (Cruz et al. 2015) are in a complete opposition with the main idea of "landscape domestication" (Diniz, 2000), since we cannot domesticate what one cannot see...

The lithic assemblage found in the Colos hypogea (São Facundo) is unique; not only for its richness in relation with the others coeval sites of Middle Tagus sub-region; but also because of its relationship with uniqueness of the funerary context where it was found. According to the presence of this rich grave goods we can assume two possibilities: the deceaseds were part of a elite warriors, thus justifying the presence of halberds, daggers, spearheads, arrowheads; or were part of elite artisans, with such important knapping skills. This monument shows how ideology guarantee a variety of rituals, cults and funerary behaviours quite different from what archaeological literature shows us. This monument demonstrates how this community has protected their deads and their grave goods. There is a diachronic reuse of the monument, from the Neolithic to the Early Bronze Age (two carenated vessels; see tab. 1) across the Chalcolithic. Taking a quick look at other megalithic monuments (see figure 1) as, dolmen 1 of Val da Laje (Drewett et al., 1992) and dolmen of Pedras Negras (Cruz, Oosterbeek, 1998a) (Tomar Municipality),

dolmen 1 of Vale Chãos (Cruz, Oosterbeek, 1998f), dolmen 2 of Vale Chãos (Cruz, Oosterbeek, 1998g), dolmen 1 of Jogada (Cruz, Oosterbeek, 1998a), dolmen 2 of Jogada (Cruz, Oosterbeek, 1998b), dolmen 3 of Jogada (Cruz, Oosterbeek, 1998c), dolmen 4 of Jogada (Cruz, Oosterbeek, 1998d), Pedra da Encavalada (Cruz, Oosterbeek, 1998e; Cruz, 2011; Cruz et al., 2015) (Abrantes Municipality), dolmen 1 of Rêgo da Murta (Cruz, Oosterbeek, 1998h), dolmen 2 of Rêgo da Murta (Cruz, Oosterbeek, 1998i) (Alvaiázere Municipality), dolmen of Foz do Rio Frio (Pereira, Bübner, 1982), dolmen of Lajinha (Scarre et al., 2003), and dolmen of Pendentes (Scarre et al., 2003) (Mação Municipality), we can easily conclude that, from the architectural point of view, Colos is, for now, a new model on the cremation mortuary practices in Neolithic-Chalcolithic. The reuse of the structure during the Early Bronze Age is also common practice at caves, hypogea and tholos in Middle Tagus region.

The Colos hypogea is completely atypical in relations of the other Neolithic/Chalcolithic megalithic monuments of the area.

These megalithic monuments so called "territories markers" have no correspondence in Colos monument, although it was, like the others, embedded with a specific symbolic funerary feature in the landscape. The Colos site allows also to discuss some new matters about the cult of the deads in Middle Tagus area. The presence of cremated bones, before the Colos foundings was a very scattered and rare phenomenon within this diachronic range, and it is unique in the Alto Alentejo area. Besides the expurgation of body decay throughout fire, thus implying a very well defined social organization, there are no landmarks in the landscape indicating a "ever resting place". The absence in the landscape of a sign of the burial place, leads to the interpretation that Colos was a Secret Place of Death. This hypothesis allowed to speculate a correspondence between the "hidden deads" and the "hidden flint hoard" in the context of



This Lithic assemblage found at Colos (São Facundo), have an unique story to tell not only because of its richness in Middle Tagus sub-region for its relationship within the funerary context. Taking advantage of the archaeological typologies is to a certain extent perfectly natural stressed they do reflect the artificial extent of human physiology, creating at the same time solutions to specific needs related with the living, namely, defence (or attack) tasks. Giving this fact, we can assume two possibilities, either the deceased were a high ranked elite warrior, thus justifying the presence of halberds, daggers, spearheads, arrowheads, or was such a gifted artisan, with such important knapping skills, that could be related within the Community to whom controlled the flint economy.

One may also think on the possibility of the existence of an specialized network flint processing well organized, reaching territories where it was inexistent. Those artisans possessed the knowledge of flint processing which would favour them socially, even at long distances.

Between the natural and the instrumental boundaries what can we say about this particular assemblage? It is important to stress that their typology (spearheads, daggers, arrowheads, blades, polished stone axe and adze), indicates that we are in the presence of a warrior flint hoard that could belong to one of the cremated bodies.



Fig. 4: flint halberds from grave good of Colos ( Photography by Nuno Miguel Queiroz)



Fig. 3: schist plaques from grave good of Colos ( Photography by Nuno Miguel Queiroz)



Fig. 5: 4 flint daggers and a spearhead from grave good of Colos ( Photography by Nuno Miguel Queiroz)



Fig. 6: flint blades from grave good of Colos ( Photography by Nuno Miguel Queiroz)



Fig. 7: flint arrowhead from grave good of Colos (Photography by Nuno Miguel Queiroz)



Fig. 8: Polished stone axes and a flint adze (in middle) from grave good of Colos (Photography by Nuno Miguel Queiroz)

As for the production of these great amount of elongated products that we will call as macro-lithic blades, it seems that they were produced by striking face single-platform cores whose lateral crest face resulted in such long knives (20-30 cm long). If we look at height parameters it seems they became from very well prepared cores with less rounded faces, but going almost around the entire circumference of the core. In some cases the bluntcutting edge was renewed showing that they were used in daily life tasks. However, some small quantities of flint could have had a social purpose and not an economic one. These big halberds have a very fine bifacial retouch, are sub-triangular and have sub-parallel negatives in its lateral rims. It is easier to think that they were produced directly from a natural flint plaque, instead of a specific thick core prepared to do so.

As for the arrowheads there are a great diversity between their types that can go from base and convex edges, sawned edges and convex base, cutting-edge stem-base arrow, tip biconcave base arrow with rectilinear edges, end of elongated arrow with straight edges and concave base, to those of long and short arrow with an invasive retouched bifacial knapped.

Technically speaking those artefacts involved lithic reduction (Hiscoc, Tabrett, 2010) throughout soft hammers percussion made of wood, bone or antler. As flakes were detached from the core the artisans were able to produce, in a particular sequence, sharp unifacial blades, that could be later retouched depending on its reuse; besides composite tools as blades, they also produced bifacial projectile points, that can be interpreted as weapons (Waldorf, 1994).

The final products were knapped by direct percussion, indirect percussion and pressure flaking since these techniques allowed a better and greater control over the strike direction and the quality of the artisan applied strength, and also the carefully percussive flaking in order to produce the very small invasive retouches (Weedman, 2006).



Fig. 9: Ceramic vessels from grave good of Colos (Photography by Nuno Miguel Queiroz)

Overall, the material found out at Colos is in complete harmony with the "cultural package" of the so called "megalithic phenomenon". The typology of the carinated bowl is linked to the Chalcolithic forms (Cruz, Delfino, Graça 2014: 13), and also the typology of the most characteristic lithic artefacts (halberds and daggers) are referable to the Chalcolithic.

The finding of this kind of remains is common in the Chalcolithic re-using phases of several Neolithic dolmens of the area. Some raw-material, as flint, is clearly exogenous, indicat-

ing the existence of a wide-range trade mechanism, very common during the Chalcolithic, corresponding to the consolidation of the production system. Also, the existence of weapons could not indicate a true state of war, but instead the existence of a specific family lineage that was buried there, legitimizing its power through the buried artefacts.

Between the natural and the instrumental boundaries what can we say about this particular assemblage? It is important to stress that their typology, already described, indicates that we are in the presence of a warrior flint hoard, which could belong to one of the cremated bodies.

As for the production of this great amount of elongated products that we will call as macro-lithic blades, it seems that they were produced by striking face single-platform cores whose lateral crest face resulted in such long knives (20-30 cm long). If we look at height parameters it seems they became from very well prepared cores with less rounded faces, but going almost around the entire circumference of the core. These big halberds have a very fine bifacial retouch are sub-triangular and have sub-parallel negatives in its lateral rims. It is easier to think that they were produced directly from a natural flint plaque, instead of a specific thick core prepared to do so.

As for the arrowheads there is a great diversity between their types that can go from base and convex edges, sawned edges and convex base, cutting-edge stem-base arrow, tip biconcave base arrow with rectilinear edges, end of elongated arrow with straight edges and concave base, to those of long and short arrow.

Again, with a bifacial knapped there are the spearheads, daggers, polished stone axe and adzes. However, some small quantities of flint could have had a social purpose and not an economic one. Manufacturing techniques of polishing the stones rough surfaces allowed to create axes and adzes becoming much stronger in order to support the impact and shock loads from its use (Davis, Edmonds 2011).

### **2.3 Examination of the lithic archaeological materials and choice of the sample.**

The lithic industry found in Colos has two components: a knapped lithic assemblage and a

polished lithic assemblage. The polished assemblage is represented by two polish axes and both of them have been analysed. The knapped lithic assemblage is composed by local and allochthonous raw materials: quartzite (43%), flint (34%) and quartz (21%).

In the lithic assemblage is possible to distinguish between two different macro groups of artefacts: the first one formed by flakes, cores and debris made in local raw materials (quartzite and quartz), the second one formed only by formal tools and products (big blades retouched and unretouched, arrowheads, spear points and halberds) made only by exotic flint. For the first group is possible to recognise different exploitation methods but only one technique, i.e. direct percussion by hard hammer. In the second group, the 95% of the artefacts shows traces of a pressure exploitation, and the last 5% show traces of percussion by organic hammer while there is only one case of direct percussion by hard hammer (Colos 27 A-8-2-100). The analysis of the knapping sequences of the two groups shows that for the first one all the phases are represented; while for the second group only the final products have been found in the site. Apparently, the elements of the second group of artefact were deliberately placed in the Funerary Monument and probably this acts were part of the rituals that took place in Colos. A similar reasoning can be done for the polished stone axes, since these artefacts were found only in association with the flint remains. For this reason our study was carried out only on the second group of the knapped lithic industry and on the polish axes.

## **3. ANALYSIS**

### **3.1 Macro- and micro-analysis of knapped Colos artefacts:**

The use-wear analysis conducted on the flint remains began with the preliminary evaluation of the entire lithic assemblage. A selection was carried out in order to identify the artefacts suitable for the use-wear study.

This preliminary phase was divided in two parts. The first part was carried out to the naked eye while the second part with the aid of a stereomicroscope in reflected light and with a Mi-

roscope Camera. Five criteria were applied to select artefacts for the use-wear analysis: completeness, presence of at least one functional edge (artefacts without potential functional edges were excluded from the analysis), morphology suitable for prehension or hafting, surface preservation (absence of marked post-depositional alterations) and presence of removals and/or roundings localized on the very edges of the artefacts, indicating ancient use. In this way it is possible to identify modifications due to artefact's use, rather than post-depositional processes. The main features that differentiate the traces of use from post-depositional alterations are the combinations of the traces attributes: the contact with the worked material produces specific combinations of attributes, which rarely are replicated by post depositional agents (Lemorini et al. 2014). As testify by all the experimental reference collections, the traces of use are always distributed in a localized portion of the artefact, usually in close proximity to the edge. The post-depositional marks are randomly spread over the lithic surface (Shea and Klenck, 1993, Asryan et al. 2014). There are three types of post-depositional surface alteration detectable in this phase of the study: edge crumbling, generalized rounding of the surface and widespread glossy/bright appearance of the quartzite cement matrix. The edge crumbling is caused by pressure on the flake edges due to trampling or sedimentary load. The result of this post-depositional alteration is the micro-fracturing of the most fragile portions of the artefacts edges (Flenniken and Haggarty, 1979; McBrearty et al., 1998). The generalized rounding appearance are caused by sedimentary abrasion as a result of hydraulic transport prior to deposition or sediment settling and pedogenic processes following deposition (Levi-Sala, 1988; Plisson and Mauger, 1988). The widespread glossy can have the same causes of the generalized rounding or can be due to a post-depositional chemical alteration (Stapert, 1976; Plisson and Mauger, 1988).

At the naked eye, the most part of the surfaces of the selected group of the Colos artefacts appears well preserved, but with the aid of the stereomicroscope in reflected light there are some post depositional alterations visible: edge removals, post-depositional blending fractures and heat alterations. Most part of these altera-

tions are soft and normally they do not preclude the use-wear study. A particular issue is represented by the heat alterations. In the considered sample there are many little fragments of flint arrowheads and halberds with strong heat alterations that not allowed to carry out the use wear study. After this preliminary screening phase the analysed sample of the Colos lithic assemblage is composed by forty-seven flint artefacts, of which 29 are retouched blades, 2 unretouched blades, 9 arrowheads, 4 daggers, 1 spear-point and 2 are halberds.

The microscopic analysis of the Colos artefact was carried out with the combined use of a stereomicroscope in reflected light for the observation of the macro-traces and of a metallographic microscope for the observation of the micro-traces. The analysis of the macro-traces provides information about the potential activities carried out (e.g., cutting, scraping, piercing, etc.) and allow a first hypothetical interpretation of the hardness of the worked materials. The hardness categories used to describe the worked materials are: soft (e.g. animal soft tissue, herbaceous plants and some tubers), medium (e.g. fresh wood and hide) and hard (e.g. bone, horn, antler, dry wood and stone). There are some materials with intermediate hardness or resistance such as medium/soft materials (e.g. fresh hide, wet softwood) or medium/hard materials (e.g. softwood, wet antler) (e.g. see: Lemorini 2006; Lemorini et al. 2014; Odell 1981; 2004; Rots 2010; Semenov 1964; Tringham et al. 1974). The analysis of the micro-traces is the study of micro-edge roundings, polishes, abrasions, and striations. This kind of study was conducted to provide a more detailed understanding of the activities carried out with the lithic artefacts and to define the diagnosis of the processed materials (e.g. see: Keeley 1980; Beyries 1987; Christensen 1996; Moss 1983; Lemorini et al. 2014; Lemorini 2006; 2000; Plisson 1985; Rots 2010; Vaughan 1985; Ziggotti 2011). To carry out the micro-traces analysis of some lithic tools of Colos with a metallographic microscope it was necessary to make moulds of the tools edges. Moulds are usually used to allow the observation of instruments made by raw materials with an high degree of glare, like quartz-rich raw materials (Lemorini et al 2014; Igreja 2009) but it is also applicable to flint artefacts (Banks and Kay 2003). In this case the use

of moulds was necessary to carry out the observation, through the metallographic microscope, of big lithic artefacts like the halberds or the big (and convex) retouched blades (Plisson, 1983). Two components mould silicone (3M Impregum F) was used to made the moulds of the edges. The study was carried out only on the moulds (negative replicas) rather than making casts (positive replicas) of each mould surface. This procedure, already used by C. Lemorini (Lemorini *et al.* 2014) has as advantages the lowering of the laboratory expenses by eliminating the need for casting material, the reduction of the loss of fine details that can occur when using casts and a better placement of the edges under the microscope. The use of moulds, in addition of being cheap, also allows the easy transport of the samples to be analysed. The analysis of the knapped lithic artefacts was conducted using three different microscopes: a stereoscopic microscope Seben Incognita III with magnification from 10x to 80x, a metallographic microscope Optika B 600 MET supplied with 5 objectives PLAN IOS MET with 5-10-20-50-100 objectives and 10x oculars equipped with a Optika camera B5 and a Microscope Camera Dinolight Am413T. The position of the traces identified on the surface of the lithic tools is referred to the diagram made by Van Gijn (Van Gijn, 1980)

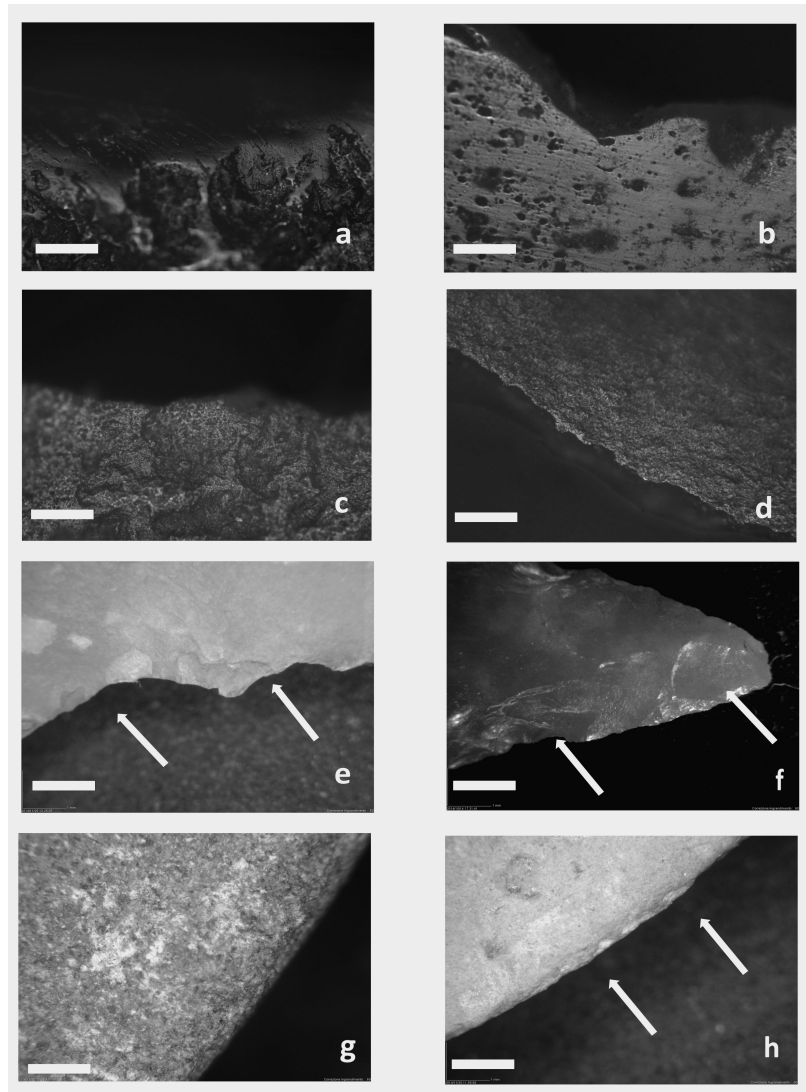


Figure. 10: Use wear on Colos lithic artifacts: (a) Colos retouched blade Col.013.4.187 with harvesting polish on the edge (scale bar= 200 $\mu$ ); (b) Colos retouched blade Col. 34 A-9-2-10 with well developed harvesting polish on the ventral surface near edge (scale bar= 100 $\mu$ ); (c) Colos retouched blade Col. 24 A-8-2-9 with light harvesting polish on the edge (scale bar= 50 $\mu$ ); (d) Edge of the dagger Col. 13-Z1-89 without use-wear traces(scale bar= 1mm); (e) Colos spear point CAB2-109 with meat working polish on the edge (scale bar= 2mm) (f) Colos arrowhead C65AR5Q9-14-17 with impact fracture (scale bar= 2mm); (g) Edge of the polished stone axes daft Col 72-A-RS without use-wear traces (scale bar= 1 mm); (h) Edge of the polished stone axe Col 38-A-9-113 with use-wear traces (scale bar= 1 mm).

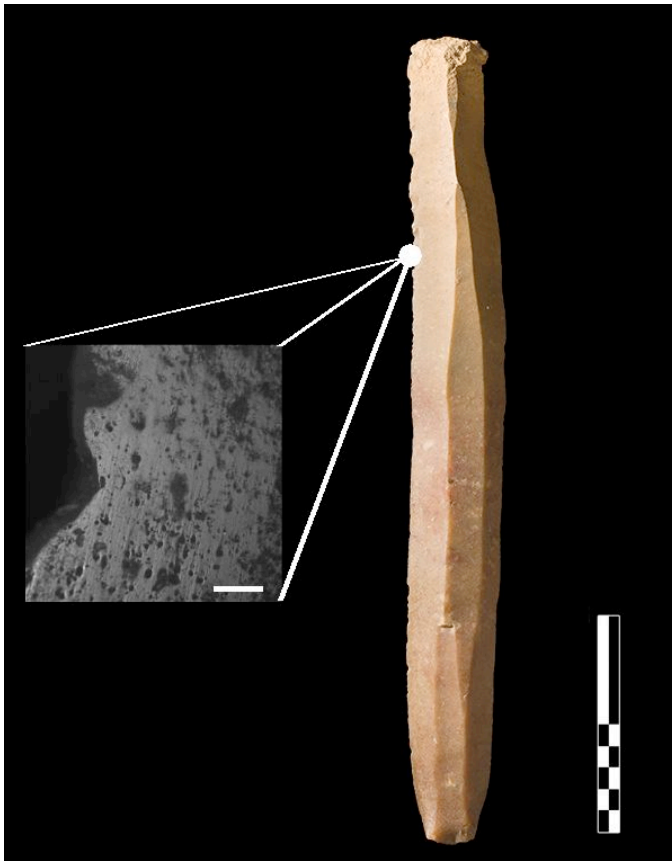


Figure 11: Colos retouched blade Col. 34 A-9-2-10 with well developed harvesting polish on the ventral surface near edge (scale bar= 100 $\mu$ ).

### 3.2 Analysis of the arrowheads of Colos.

The study of the arrowheads was conducted through the approach at low magnification (Semenov, 1964), using the criteria developed by Fischer and O'Farrell (Fischer *et al.*, 1984) and developed by several researchers in recent years (Dockall, 1997; Geneste and Plisson, 1990, 1989; Lombard, 2005; Schmitt *et al.*, 2003; Shea *et al.*, 2001; Sisk and Shea, 2009; Villa and Lenoir, 2006). The analysis were carried out using a stereo microscope Seben Incognita 3 (10-80x) and a digital microscope Dinolight Am413T (5-230x). The position of the traces identified on the surface of the arrowheads is referred to the diagram made by Van Gijn (Van Gijn, 1989).

### 3.3 Analysis of polished stone axes of Colos.

The study of the two polished stone axes of Colos was conducted using the method developed in this last years for the study of the ground stones (Adams, 2014; Dubreuil and Savage, 2014; Lunardi, 2012; Lunardi *et al.*, 2013). These method was developed from the

Semenov's classical methodology for the use wear analysis of knapped lithic tools (Semenov, 1964). These studies focus on the raw materials used for the production of polished instruments (Dubreuil and Savage, 2014; Dubreuil, 2004; Hamon, 2008; Schneider, 2002; Shoumacker, 1993) and contribute to the development of a methodology based on both Microscopic observation at low magnifications (Adams, 2014; Dubreuil and Savage, 2014; Hamon, 2008) and in the comparison with a suitable experimental collection (Adams, 1989; Delcaro, 2005, 1996; Hamon, 2008; Hansen and Eigeland, 2009).

## 4. Results

All of the twenty-nine retouched blades (100%) selected for the analysis showed use-wear traces together with the two unretouched blades and the spear-point, while four of the nine arrowheads present impact fractures. All the daggers and the halberds do not have use wear-traces. All the retouched and the unretouched blades present harvesting traces, located only on one of the edges of the instruments. In four cases were found traces of hafting with wood material. The spear-point show, near the tip, a clear trace of meat work and on the tip there is also an impact fracture. Four arrowheads have impact fractures on the tips and two of them show other fractures on the basis. Twelve retouched blades, one blade and two arrowheads have post-depositional alterations. Among them, twelve have alteration linked to a trampling action, two presents a trampling edge alteration associated with a light thermal alteration (small cracks) and one shows a minimal white patina alteration. Daggers and halberds do not present any traces of post-depositional alterations. One of the two polished stone axes is a daft and does not present use-wear traces but a production trace on the edge; the second one is a complete tool and has traces attributable to a throw cutting action on medium hard materials (probably wood).

## 5. Discussion

Through the use-wear study of the lithic assemblage of Colos is possible to reconstruct part of the ritual activities that were carried out in the site. The assemblage is dominated by blades and retouched-blades that have traces of activities linked to harvesting, suggesting their

identification as harvesting knife. The harvest traces are very easy to recognise on the edges of the lithic tools (Barrón et al., 2015; Palomo et al., 2011) and in the case of the lithic assemblage of Colos the traces are not very developed. This data may suggest that the use of these artefacts was not intensive but probably was symbolic or ritual.

The presence in the assemblage of daggers and halberds without any kind of use-wear traces suggests another aspect of the rituals carried-out in the Colos sanctuary: probably these artefacts were offering or grave goods realized for the rituals and never used.

The different purpose of these two groups of artefacts is documented also by the different presence of the post-depositional alterations, since the group formed by blades and retouched blades present the same grade of alterations, and the group formed by daggers and halberds does not present any kind of alterations.

The arrowheads group has elements with use-wear and elements without use-wear. This data agrees with other studies conducted on the arrowheads found in funeral contexts in the Neolithic and Chalcolithic of the Iberian Peninsula. These studies attest the simultaneous deposition of broken and unbroken arrowheads in the grave-goods, thanks to the important symbolic meaning of this kind of objects (Berruti and Daffara, 2014; Gibaja Bao, 2004, 2003)

The importance of the rituals carried-out in Colos is testified by the techniques employed and by the exotic raw material used for their production. This data documents an high expense, in terms of time and resources, employed for these rituals by the prehistoric populations (Terradas et al., 2012).

Other important data come from the numerous fragments of burned halberds and arrowheads

found: thermal extraction and dehydration testify an exposition to temperature near to 600-650 °C (Clemente-Conte, 1997; Kiers, 2013; Larsson, 2000) that is the same temperature used for the cremation of the Colos dead bodies (Cruz et al. 2015: 309).

## 6. Conclusion

This lithic assemblage wear-trace study allows us to conclude about two main aspects. Blades and arrowheads were in fact used in daily life tasks before their deposition beside a dead body. Halberds and daggers were produced with a specific meaning - to keep up with the new life of the deceased.

Concerning the specific mortuary performance reconstitution one can stress the fact there are two main strong features indicated by the use wear study. In the first case, blades and arrowheads were scarcely used as tools on daily life before they were offered as grave goods.

One possibility that we could present for such a few wear traces can be explained by some wear evidences occurred during the funerary cultural process. If they were indeed used in daily life tasks as harvest they would present much more wear traces evidences, which it is not the case.

In the second one, halberds and daggers had no wear traces at all; they were specifically produced to go along with the deceased and were placed in *ustrinum*. Respect to this lithic assemblage we tend to support them as being symbolic items having within a transcendental value mostly connected to the warriors elites, since flint, as a raw-material, could remain forever as it cannot be corrupted like metal tools in arsenical copper.

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