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LALPUR: A MICROLITHIC SITE ADJACENT TO THE INDIRA GANDHI NATIONAL TRIBAL UNIVERSITY, AMARKANTAK, MADHYA PRADESH, INDIA

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ABSTRACT

In Indian Subcontinent the Microblade technology is continuously present from the late Middle Palaeolithic until the Iron Age period, making its association with modern humans very much undisputed. This technology appears to lead to microblade manufacture, with full-blown microlithic appearing later. It is a well-known fact in the prehistory branch that microblade technology in the Indian Subcontinent was developed locally by modern humans after 35 ka. This paper demonstrates and discusses the Microlithic site discovered during a recent survey carried out by the author in the village of Lalpur situated adjacent to the Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh, India. Until a few years ago almost nothing was known of the Microlithic site in this region, even though several sites had already been discovered in the eastern state of Madhya Pradesh, India, which has always been known for its rich microlithic collections. It should be noted that over 600 sites have been reported to this date, containing some with tools for tasks bound for heavy-duty.

INTRODUCTION

The microlithic assemblages are generally characterized by and associated with systematic backed artifact production, related to the emergence of modern human behaviour and dispersals indicating much refined cognitive abilities. These industries are remarkable for their production of much smaller cores and flakes with an amplifying preference towards crystalline hard rocks. In India, microliths are no doubt associated to systematic microblade production using unidirectional or bidirectional blade cores. The technology evolved through time with indications of the use of indirect and pressure blade production by the time of the Mesolithic (Clarkson et al. 2009). Microlithic assemblages often contain bone tools, incised ostrich eggshells, and conch beads, such as at Jwalapuram locality 9 and Patne (Clarkson et al. 2009, Sali 1989).

Microlithic artifacts are often much smaller in size than other non-microlithic ones, and it indicates “normal size” artifacts. The microlithic is extricated from that of the Upper Paleolithic or Late Paleolithic (James and Petraglia 2009). The Upper Palaeolithic or Late Palaeolithic is used in India to refer to a more obscure group of industries that contain a much higher proportions of blades, microblade, with many small retouched tools and a general absence of Levallois core technology. It must be emphasized that many of these industries do not include backed artifacts.

The shift in technology indicates varied environmental adaptive strategies of hunter-gatherers/foragers over much of the parts of the world from the late-middle Pleistocene through the early Holocene and beyond that. In the last decade, archaeologists have put forward two contrasting models for the origins of the microlithic in India. Mellars (Mellars 2006; Mellars et al. 2013) has emphasised that Homo sapiens left Africa sometime after 60 ka with a distinctive microlithic technology, arriving in South Asia no later than 50 ka. The microlithic industry has also been reported from Batadoma-Lena, in the rainforest of southern Sri Lanka from ca. 36 ka onwards to the end of the Pleistocene (Perera 2011). However, in the Indian subcontinent, the antiquity of Microliths have been dated back to 48 ka at Mehtakheri in Madhya Pradesh (Mishra et al. 2013), 35 ka at Jwalapuram locality 9 in Andhra Pradesh (Clarkson et al. 2009), and 34-25 ka at Kana and Mahadebbera in West Bengal (Basak et al. 2014). These sites accentuate technological diversity, ecological conditions, and human behavior in the Late Pleistocene period. The dates derived by optically stimulated luminescence dating technique supply us with the earliest chronology of these industries in Bengal and eastern India and bloster up supporting evidences to the antiquity of microlithic industries in the Indian subcontinent. In essence, Mehtakheri is to this date the most aged micro-blade site in the Indian Subcontinent. This paper examines and discusses the Microlithic site discovered in the village of Lalpur sites of IGNTU and also this site can refer to as “lithic artefact scatters”.

GEOLOGICAL CONTEXT & GEOMORPHOLOGY

In India, Madhya Pradesh has a huge geographical expansion but for the current study only Lalpur in the district of Anuppur is considered. The main rock group of Madhya Pradesh is the Vindhyan supergroup which belongs to the Neo Proterozoic period. Next is the Gondwana Supergroup which belongs to the period between the Carboniferous and Lower Cretaceous (Meert and Pandit, 2015). The youngest rocks are the Deccan trap which belongs to the period between Upper Cretaceous and Paleocene (Sheth et al. 2001). Anuppur District is the foundation of various geological formations. The highest lithological parts of the area are Archaeans, Gondwanas, Lametas, and Basalts. Granites and Granitic-Gneisses are subsequently main rock types which are found in the southeast part of the district. They are crystalline rocks, forming a basement in the district. Gondwana is the semi-consolidated Gondwana group of rocks that bears coal, felspathic, medium to coarse-grained sandstone and shales are covering the north and eastern part of this district. Lametas are sedimentary deposits resting over Archean/Gondwana formations in the Rajendragram plateau of Pushprajgarh Block. Deccan Traps are Basaltic flows, forming hill ranges in the southwestern region of the district. The Rajendragram plateau of Pushprajgarh Block is completely occupied by basaltic rock. Bauxites are seen in the south-eastern part of Pushprajgarh Block. Lateritic soils with less iron ore and leached in due course are found as capping above the Deccan trap. The texture is sandy to loam-clays and soil color ranges from light brown to brownish-yellow. In some marshy areas, a poor and olive-grey zone is also witnessed. Geomorphologically upper part is a province of the high-level plateau and the lower region of the middle-level plateau. Annually maximum temperature of the area is around

31.60C and the minimum is 18.20C. The normal annual rainfall is about 1235mm with relative humidity of about 66%.

The Son and Narmada rivers originate in Maikal Range of Madhya Pradesh and these rivers flow in a straight-lined fashion for a substantial distance flanked by the Vindhyan slopes and the valleys. This lineament has managed the geological spreading of the Vindhyan and Gondwana rocks on its north and south, respectively (West 1962), in a graben-like construction. The ancient tectonic activity produced a kind of rift across much of north-central India, where the southern scarps of the Vindhya and Kaimur Hills mark the northern boundary, flanking the trench for ~965 km (Spate and Learmonth, 1967: 628; Ram et al., 1996).

THE SITES AND THE PRESENT ENVIRONMENT

Anuppur is a one of the tribal-dominated districts of India, comprising 47.9% of the scheduled tribe (ST) inhabitants. The district is situated in the eastern region of Madhya Pradesh state of India having 3724 sq. km extent lying between 22º7′and 23º25′ N latitude and 81º10′ and 82 º 10′ E longitudes. This district is also known for Amarkantak hill which is also a tourist place, wherefrom two significant rivers namely, Narmada and the Son originate from the Maikal range. For history, the area has been a part of the former Gondwana Kingdom (i.e., land of Gond tribe) immensely occupied by many other tribes, with Gond as a much remarkable community. Pushparajgarh is one of the largest divisions of the district with predominantly rural (96%) area. A major proportion of the division is hilly, covered with Sal (Shorea spp.) dominated moist-deciduous forests, dominated by black and red soils. The area receives an annual rainfall of 120 cm; summer temperature ranges from 28 - 46ºC, while average winter temperature is about 15ºC. About 77% of the total inhabitants comprises of scheduled tribes (www.censusmp.nic.in).

The site of Lalpur (22°47′ 26″ N, 81°44′ 55″ E) is located on the right bank of the river Johila, which is at the northern slope of the Achanakmar-Amarkantak Biosphere Reserve. The west, south, and east of the site are surrounded by the hills and the northwestern part is surrounded by the hillocks and agricultural land. After origination from Jaleswar in Chhattisgarh, it runs towards the northwest part. The Dam on this river, named Johila Dam is located close to this site, which is about one km from village Podki and adjacent to the Indira Gandhi National Tribal University campus.

The landscape is dotted by an ample amount of forests and hills. The Maikal range is the chain of Vindhyan and Satpuras forms. This forms a bold scarp facing the East and Southeast, and is full of dense forests. In the study area except for a few areas of the North side, the hills and forests are present at a little distance from the remaining three sides of the Indira Gandhi National Tribal University campus (Fig.1. A,B,C). The approximate distance of these hills and forests ranges from one km to three km. The Karangara jungle is situated at the South- eastern side, Brarni-pamra jungle is situated on the North-Western adjacent and Pondi Pahar is located on the Western side of the study region. River Gupt Narmada originates behind the Vice Chancellor's Bungalow at IGNTU campus (Fig.1. A,B,C) and is connected to Kantur Nala. This Kantur Nala originates from Bijauri and is in turn connected to the Johila River which is located near the Western boundary of village Lalpur. Sal is the dominant tree found in the study area with mixed vegetation at the foothill region.

The site showing the varying degree of surface exposures, lithic artifact densities, and natural features, have also been identified. Sparse vegetation cover and undulating topographic features, as well as intensive modern basalt quarries operation caused an identifiable loss of some portion of the site (Fig. 1.B,C).

THE LITHIC ASSEMBLAGE

Microliths, total 933 in number, have been recovered from the surface collection as well as exposed stratified contexts. Microliths have been classified into ten typologies, for instance, Backed blade, Blade, Bladelet, Blade core, Flake, Flake fragment, Cortical flake, Levolloise core, Scraper, and Side scraper (Fig. 2). The artifacts were lying plentifully on the plain surface (Fig. 3). There are few artifacts are recovered from the stratigraphic layer of the quarried sections of the basalt quarry for commercial purposes (Fig. 4). The artifacts are categorized as microliths because most of the tools are measuring within 3.7mm-136.2mm in size, which is considerably small (Table 2). Microliths are lithic components whose size ranges between less than 2cm to 5cm, depending on the size of the raw material available for work (Misra, 1965). However in the European context, the size of the microliths varies to a large extent. In India, a site like Bogor, Rajasthan indicates that some microliths having a length of 40 mm or over but the most of them falls between 15mm to 20mm (Misra, 1973).

A total of 933 (100%) artifacts were identified from this site. Several important attributes were recorded in order to understand the variability of the lithic assemblage from this site. General measurements like maximum length, maximum width, and thickness were recorded with the purpose of explain the size and shape of artifacts from this site. Artifacts were classified as backed blades n = 14 (1.5%), blade n = 114 (12.2%), bladelet n = 8 (0.9%), blade core n = 120 (12.9%), flake n = 548 (58.7%), flake fragment n = 45 (4.8%), cortical flake n = 72 (7.7%), levolloise core n = 4 (0.4%), scraper n = 6 (0.6%), and side scrape n = 2 (0.2%) (Table 1). Artifacts from Lalpur vary considerably in size and shape (Table 2). Artifacts vary in length (3.7 -136.2 mm), width (3.1-2864 mm), and thickness (1.1-84 mm). Figures 5 to 7, provides a reliable graph of maximum length for all collected artifacts. Side scraper (128.2 mm) is the artifact whereas; the smallest among the entire artifact is the flake fragment (12.54 mm). Scraper (39.02 mm) maximum width for all artifacts whereas; minimum width of the entire artifact is backed blade (7.59 mm) and blade core (13.01mm) is the maximum thickness of all artifacts whereas; minimum thickness of all artifacts is backed blade (4.01mm).

The assemblage includes two elements, one related to microblade production and another one is related to flake production. The microblade element of the assemblage is made perticularly on chalcedony and chert with chert and milky quartz and limestine being a minor element. Most of the chalcedony artifacts belong to the microblade, blade core, blade, and flake production. Some chalcedony flakes and flake fragments might have also been utilized as tools. Levolloise core, side scraper, and scraper are few tools made on chert and limestone.

The standard size of the cores is same as the standard size of the blades (Table 2), emphasizing the fact that many blades are longer than any of the microblade cores. The microblade cores are 12.7-38.3mm maximum in their dimension. Flakes 58.7%, flake fragment 4.8%, and cortical flake 7.7% indicate an extensive reduction of the cores in the given site. The size of the flakes is also rather small with the average size being 4.9mm and the modal size 1.1-58.8mm (Table 2, Fig. 5). The assemblage, consequently, lacks the early stages of core preparation and is exclusively connected to microblade production and reconstructing of cores to continue microblade production. It should be noted that blades in all probability is detached by the hard hammer technique.

RAW MATERIALS AND SOURCES

Geologically the catchment area is located in the basaltic lava flow, with some places laterite, of the Deccan trap. Vindhyan sandstones and shales of the Kaimur Range (Williams and Clarke, 1984) and tertiary basalts materialize in the headwaters of the Son and Narmada. These were the source of chalcedony, agate, and jasper pebbles used in the production of artifacts in the Son and Narmada during the later Pleistocene (Williams and Clarke, 1984; Clark and Williams, 1987: 21).

The raw material used to fashion Microlithic artifacts in Lalpur is silica-based cryptocrystalline forms of chert, chalcedony, milky quartz, etc. Chert, in various shades of brown, red, green, and yellow is the most common raw material to be found in the region. All these stones are found abundantly in the form of chalcedony vein, basalt, and vein angular fragments in the foothills of the region.

The collection of artifact counts made on different raw materials at the site were of 933 and among them, 687 were made on chalcedony with 73.9%, 214 were made on chert with 22.8%, 23 were made on milky quartz with 2.4%, and 9 were made on limestone with 0.9%. All these raw material types were most probably exploited by the hominins to manufacture these artifacts at this site. (Table. 1). Chalcedony is abundantly utilized in an industry dominated by microliths. The chalcedony, in the form of veins, lies within the middle part of the basalt weathered deposit at the site was the source of raw materials for the microlithic industry. The chalcedony veins disintegrated and formed as clasts, which occur in angular, subangular in nature. The use of chalcedony represents the collection of lithic raw material was derived chalcedony from the local sources (Fig. 8, A,B,C). It is interesting to note that the bedrock i,e., basalt weathered exposed in several areas on the terraces and the microliths occurred in concentrated patches around this exposed bedrock. Supplementary materials present in the assemblage in very small quantities include 23% of chert, 2% of milky quartz, and 1% of limestone. The use of chalcedonic silica constitutes the collection of lithic raw material from basaltic vein sources; chert, milky quartz, limestone most probably local materials outcropping within the reach site.

CONCLUSION

In the present study because of the shortage of proper geo-chronological concentrating, the artifacts recovered from the site are mentioned as microlithic assemblages on the basis of their outline, size, and also other significant aspects of technology. The given study emphasizes that Lalpur and its adjoining area may provide us with significant knowledge in the field of the prehistory of northeastern Madhya Pradesh, India. The Mesolithic people of this area used microlithic tools for their day to day survival activities such as hunting, cutting objects, penetrating, so on and so forth. The microlithic assemblage from Lalpur includes evidence for both the manufacture and use of wide variety of stone tools. The stone knappers used a range of raw materials, including both very local stone and stone from slightly further afield. Most of the raw materials like chalcedony, chert, milky quartz, and lime stone were brought and extracted to the site as angular/subangular ready for working, but chert seems to have come from distance also vary. However, most sources are within a range of about 1-2 km from the find spot. Knapping techniques included direct percussion used to dress cores as well as for the removal of initial flakes. Though much of the assemblage would be at the site former to the prehistoric period, there are many tools referring to the Mesolithic date. These include a wide variety of narrow-blade microliths, blades, and also blade cores.

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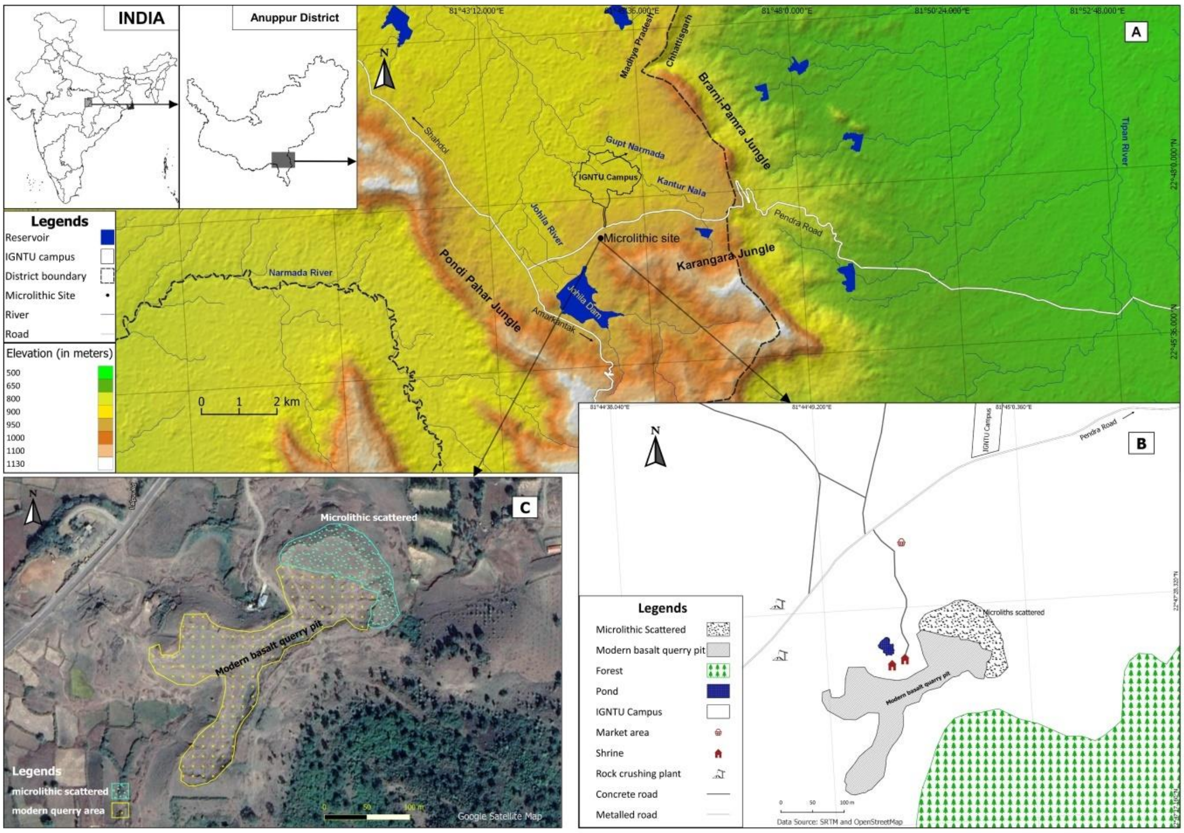

Fig. 1. (A) Map of study area indicating the geographic location, (B) Site map of Lalpur and surrounding area, (C) Panoramic view of the site.

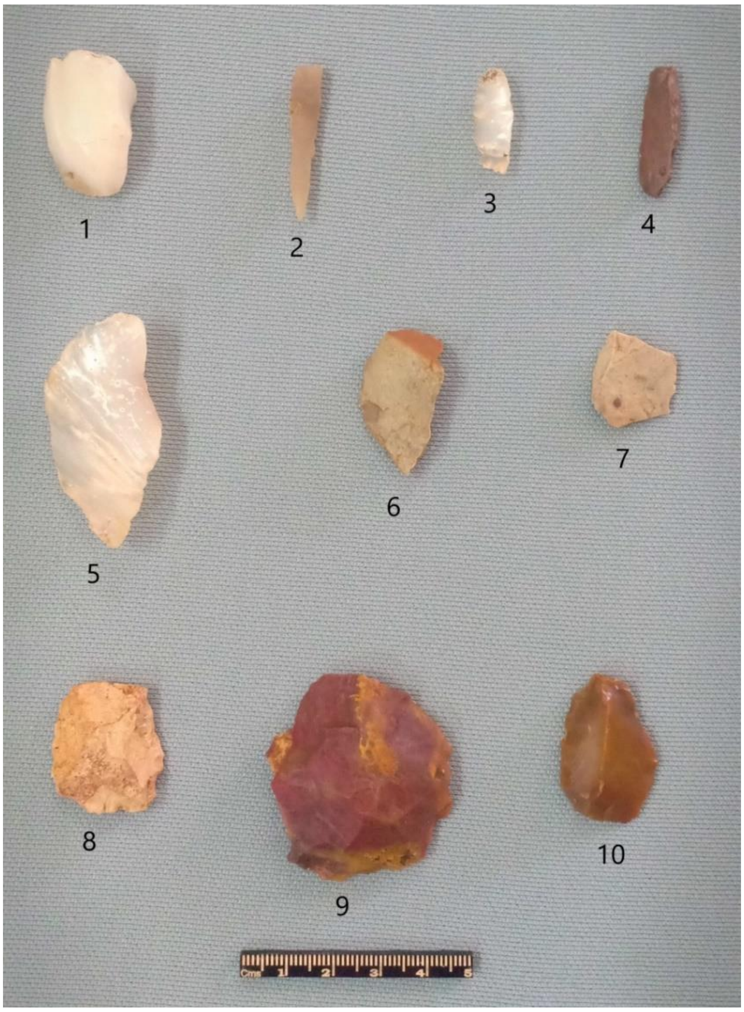

Fig. 2. Lithic artifacts. 1. Blade Core; 2. Blade; 3. Bladelet; 4. Backed blade; 5. Flake; 6. Cortical flake; 7. Flake fragment; 8. Scraper; 9. Levolloise core; 10. Side scraper.

Fig. 3. Landscape context of the site with distribution of the lithic artifacts

Fig. 4. Image shows the exposed brownish soil deposit following modern basalt quarrying

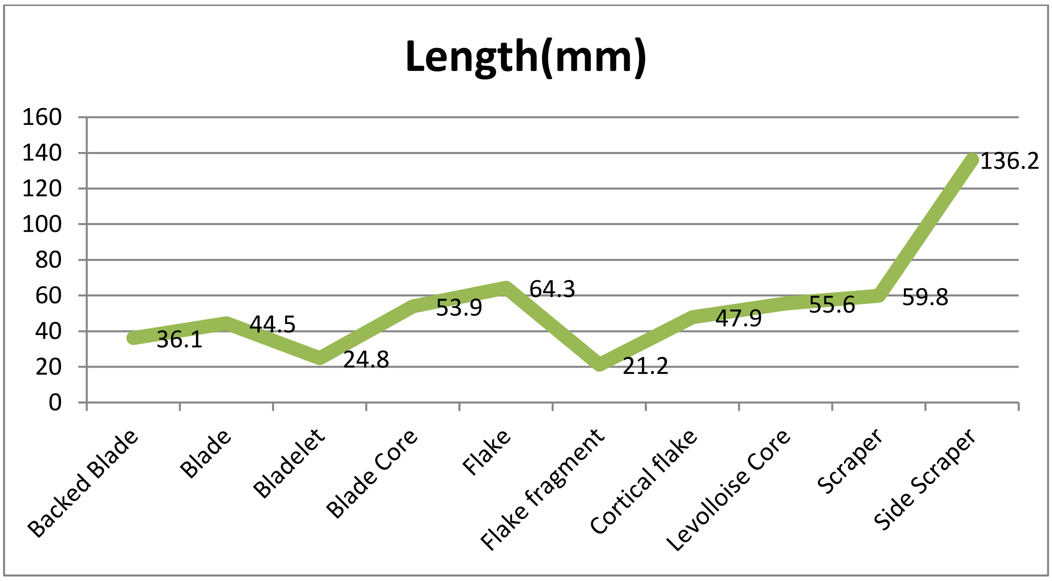

Fig. 5. Length of all stone artifacts

Fig. 6. Width of all stone artifacts

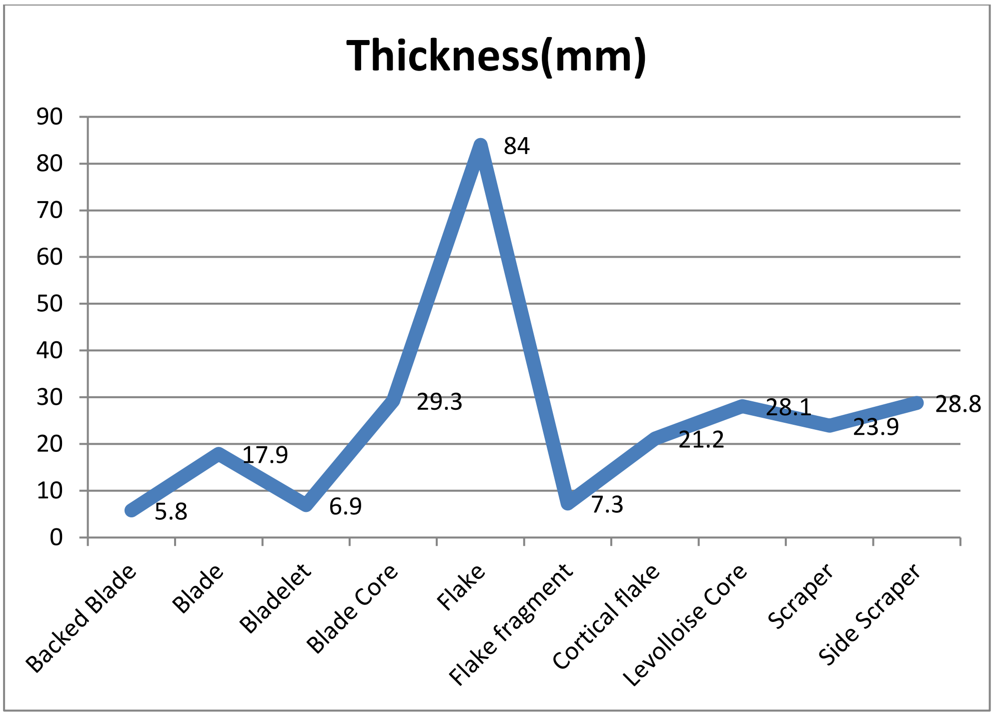

Fig. 7. Thickness of all stone artifacts

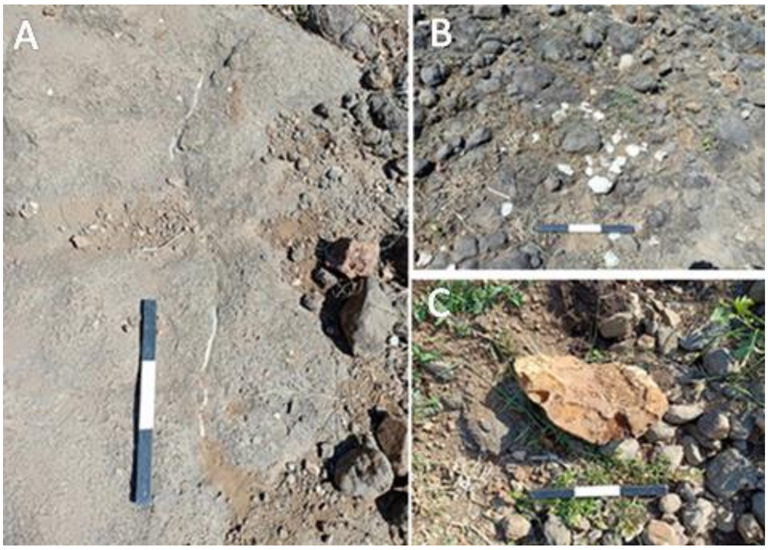

Fig. 8. (A) Chalcedony veins, (B) Scatter of chalcedony fragments and (C) Chalcedony subangular in nature

Table 1. Raw materials used with respect to various Artifacts

	Raw Materials								
Lithic Artifacts	**Chert**	**%**	**Chalcedony**	**%**	**Milky Quartz**	**%**	**Lime Stone**	**%**	**Total**	**%**
Backed Blade	6	0.6	8	0.9	0	0	0	0	14	1.5
Blade	34	3.6	80	8.6	0	0	0	0	114	12.2
Bladelet	2	0.2	6	0.7	0	0	0	0	8	0.9
Blade Core	14	1.5	104	11.2	2	0.2	0	0	120	12.9

Flake	132	14.2	395	42.3	18	1.9	3	0.3	548	58.7
Flake fragment	14	1.5	24	2.7	3	0.3	4	0.4	45	4.8
Cortical flake	2	0.2	70	7.5	0	0	0	0	72	7.7
Levolloise Core	4	0.4	0	0	0	0	0	0	4	0.4
Scraper	6	0.6	0	0	0	0	0	0	6	0.6
Side Scraper	0	0	0	0	0	0	2	0.2	2	0.2
Total	**214**	**22.8**	**687**	**73.9**	**23**	**2.4**	**9**	**0.9**	**933**	**100**

Table 2. Descriptive Analysis for different artifacts with respect to maximum length, maximum width, and maximum thickness

Variable	**Artifacts**	**Mean**	**Minimum**	**Maximum**	**Std. Deviation**	**CV**
Maximum Length (mm)	Backed Blade	22.05	14.4	36.1	7.24	0.33
	Blade	21.12	10.3	44.5	6.68	0.37
	Bladelet	18.79	12.8	24.8	6.68	0.35
	Blade Core	26.99	15.2	53.9	6.90	0.25
	Flake	23.15	3.7	64.3	9.25	0.40
	Flake fragment	12.54	5.3	21.2	3.18	0.25
	Cortical flake	25.86	11	47.9	7.81	0.30
	Levolloise Core	48.58	41.8	55.6	6.58	0.14
	Scraper	47.22	27.5	59.8	14.59	0.31
	Side Scraper	128.2	120.2	136.2	11.31	0.09
	Total	**23.53**	**3.7**	**136.2**	**10.38**	**4.69**
Maximum Width (mm)	Backed Blade	7.59	4.2	9.3	1.41	0.19
	Blade	11.27	5.7	22.8	3.65	0.32
	Bladelet	15.65	7.3	28.8	8.26	0.53
	Blade Core	19.69	11.5	40.4	4.84	0.25
	Flake	21.88	3.5	28.64	122.54	5.60
	Flake fragment	7.74	3.8	11.8	2.00	0.26
	Cortical flake	17.66	3.1	32.4	6.06	0.34
	Levolloise Core	45.9	40.1	52.7	6.75	0.15
	Scraper	39.02	23.8	48.1	11.11	0.28
	Side Scraper	76.1	73.6	78.6	3.54	0.05
	Total	**19.35**	**3.1**	**28.64**	**94.11**	**4.87**
Maximum Thickness (mm)	Backed Blade	4.01	2.1	5.8	1.01	0.25
	Blade	4.83	1.1	17.9	2.51	0.52
	Bladelet	4.49	1.5	6.9	1.77	0.39
	Blade Core	13.01	2.7	29.3	5.22	0.40
	Flake	7.53	1.2	84	5.50	0.73
	Flake fragment	4.39	1.1	7.3	1.38	0.31
	Cortical flake	9.42	3.4	21.2	3.73	0.40
	Levolloise Core	21.7	15.8	28.1	6.30	0.29

Scraper	12.23	5.2	23.9	8.55	0.70
Side Scraper	27.1	25.4	28.8	2.40	0.09
Total	**7.95**	**1.1**	**84**	**5.58**	**0.70**