The Beads from Gandi Umar Khan in the Gomal Plain, Pakistan: An Introduction

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Abstract

The mature Harappan period urban centre of Gandi Umar Khan is located to the west of Dera Ismail khan city in the Gomal Plain of Khyber Pakhtunkhwa in the Northwestern South Asia. Discovered in 1997, the site of Gandi Umar Khan was excavated jointly by the Directorate of Archaeology and Museums, Government of Khyber Pakhtunkhwa and the Department of Archaeology, University of Peshawar in 2003 and in 2004. Four cultural periods have been identified namely the Tochi-Gomal, Transitional, Kot Diji and mature Harappan ranging in date tentatively from 3300 to 1900 BC, based on relative chronology from identical sites in the region. In addition to a large number of cultural artifacts such as ceramics, figurines, metal objects and tools, about 1504 beads, pendants, seal and amulets made of stone, bones, terracotta, shell, copper alloys, gold and glass were also discovered during these excavations. Here focus is made only the beads from the site. The extensive study of these beads is fascinating because they can provide significantly more information about populations' mining and technological abilities, as well as their economic and social activities, that we can imagine. Besides, they help us dating and contextualizing other material. The study examines the bead collection in the context of materials utilization as well as its typology, origin and cultic significance. The purpose is to know a better understanding of the significance of the Gandi Umar Khan site in the Gomal Plain.

Keywords: Gandi Umar Khan, Gomal Plain, Beads.

1. Introduction

The focus of the article is to provide an overview of the collection of beads made from Gandi Umar Khan in the Gomal Plain. The importance of Gandi Umar Khan on the Gomal Plain during the Indus Civilization cannot be ignored (Jan, Ali and Khan 2008: 15-30). It yielded a handsome amount of imported material (dating from the end of the 4th millennium B.C. to the beginning of the 2nd millennium B.C). Beads represent the earliest form of enduring decorative items created by humans. Beads are little, elegant, long-lasting and precious artifacts that were usually common in all the ancient communities, which are widely recognized as fundamental elements

of human adornment (D'Errico et al. 200): 16051-16056). The utilization of these items exhibits variability not only across different generations, but also transcends various socio-economic, political, and cultural contexts (Pokornowski 1979). One may understand when, how, and where the beads were manufactured and what are their sources by analyzing their material, style, adornment and production processes (Dubin 1987). Beads may significantly supplement the available data obtained from the study of stone tools and ceramics, regarding socioeconomic relations and establishing chronology. It also throws light on sophisticated technology and the area's trade network (Francis 2003: 368-376). The beads are made for other purposes as well rather than decoration. Reliant on the material and/or form and style of the bead, they might have had a spiritual, economical, religious, magical, or medicinal sphere as well (Kenoyer 2007). In this approach, we may obtain a sense of how ancient cultures thought and believed. Subsequently, most beads appear to have been made locally at Gandi Umar Khan, and specific amulets/pendants, beads ornamentation, and colour priority have certain symbolic significance that may have been adopted in the region. Such finds demonstrate that the people of Gandi Umar Khan were aware of the deeper meanings associated with various materials and bead types.

2. Beads Typology

A variety of beads are discovered at Gandi Umar Khan. Based on their material and shapes as well, the following types, are recognized, which is established according to the methods of Beck (1928) and Kenoyer (2007). The latter recently created a systematic framework for explaining various bead types and forms. The form, shape, perforation, colour, material and decoration of the beads are all terms utilized in the approach, thus its vital to define them. Here some of Horace Beck and Mark Kenoyer's definitions have been conveniently used, such as long; very long; short; and very short beads, as they are widely accepted. If the bead's length is greater than its width, it is considered "long" and if the width is greater than the length, it is considered "short". Detailed length class measurements have been mentioned in Table 1 below.

Length Class	Category	Length
Very very short	1	0.1 - 1.0 mm
Very short	2	1.1 - 5.0 mm
Short	3	5.1 - 10.0 mm
Medium	4	10.1 - 20.0 mm
Long	5	20.1 - 30.0 mm
Very long	6	30.1 - 40.0mm
Very very long	7	>40.1 mm

Table 1 - Measurements followed to record the beads length.

3. Beads Shapes

The overall shapes of the beads, documented at Gandi Umar Khan, are mentioned below for better understanding and analysis (Fig. 1). Spherical beads have a sphere-like appearance. The barrel shape beads have blunted ends, giving the bead a distinctive barrel appearance. They are either segmented barrel or barrel with beveled ends. Cone shape beads have either simple cone-like appearance or truncated cone, having a single straight line in the profile that is not parallel to the axis and does not meet the perforation. The bicone (biconical) beads are made up of two equally symmetrical cones that cross in the middle of the bead on a definite line. They are either truncated bi cone with a profile made up of two straight lines at an angle to one another that do not intersect at the perforation or truncated convex bicone with two flat ends due to the curved profile not meeting the perforation. The cylinder shape beads have variations such as tapered, double chamfered, (bicone profile with a truncated cylindrical shape), cylinder with two convex ends, cylinder with one concave end, crenellated cylinder (with a series of wide notches along the perimeter, similar to cogwheel teeth), cylinder with depressed center, lenticular cylinder, and ellipsoid/ square cylinder. The oblate beads with a sphere that has been squashed from the top such that the diameter of the sphere from pole to pole is less than the diameter of the sphere from equator to equator are also there in repertoire. The teardrop / pear shape and pierced annular beads are also the types used at Gandi Umar Khan.

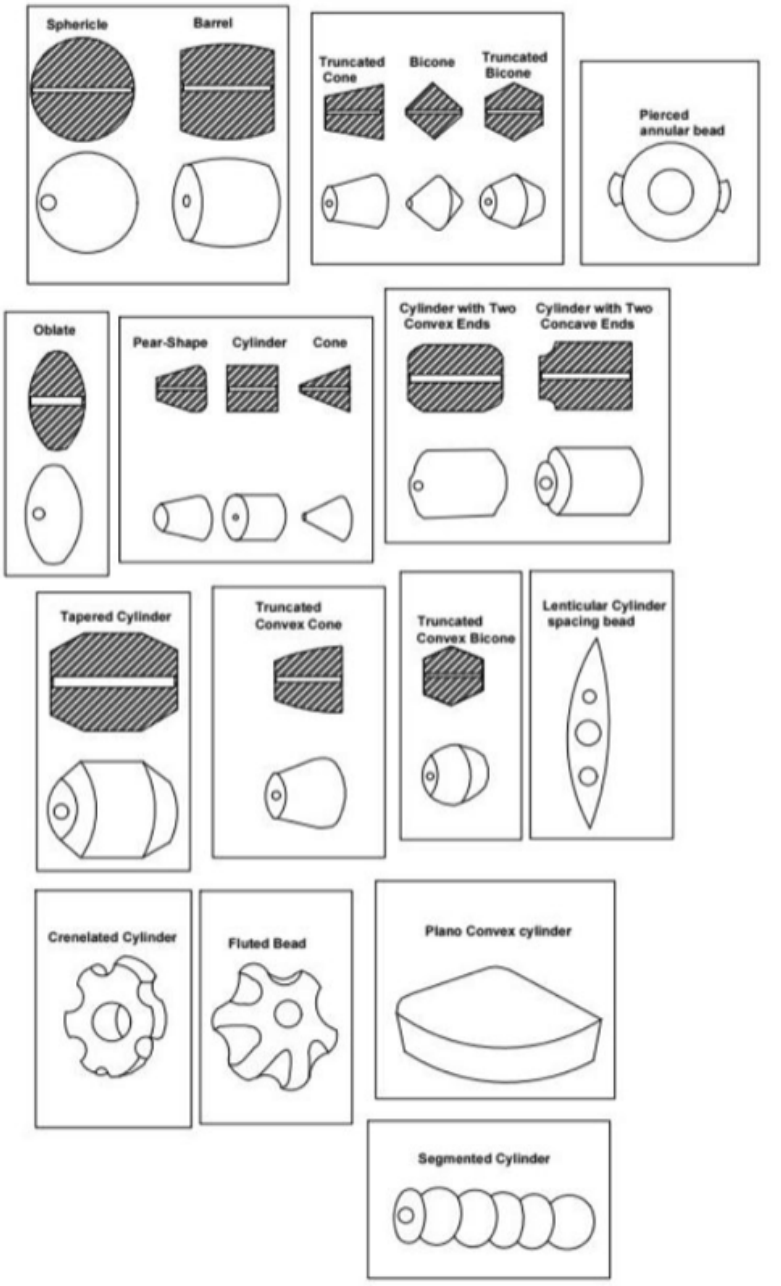


Fig. 1 - Shapes of the beads used at Gandi Umar Khan.

4. Material

About 1504 beads, pendants and button seals have been excavated from Gandi Umar Khan belonging to all the periods with majority of them belong to the mature Harappan period. The material of the beads was identified with naked eye from their texture, hardness and colour, in addition to several non-destructive methods in laboratory at the National Centre of Excellence in Geology, Peshawar University. However, due to complexity, material of the three beads have not been identified. Among these beads and pendants/amulets from Gandi Umar Khan (2003 and 2004), the steatite is outnumbering the terracotta and lapis lazuli. Carnelian beads are plentiful as well. A variety of material has been utilized in the making of beads, which are shown below (Table 2, 3 and Fig. 3).

No	Material	Beads of 2003 Excavation	Beads of 2004 Excavation
1	**Stones**		
1.1	Agate	21	42
1.2	Carnelian	35	87
1.3	Garnet	-	1
1.4	Marble	2	8
1.5	Turquoise	2	2
1.6	Lapis Lazuli	30	103
1.7	Jade	-	1
1.7	Jasper	10	18
1.9	Quartz	4	8
1.10	Serpentine	3	6
1.11	Alabaster	5	8
1.12	Slate	13	17
1.13	Amazonite	1	-
1.14	Calcite	-	3
1.15	Soap stone	-	2
1.16	Sand stone	8	5
1.17	Silt stone	-	3
1.18	Lime stone	12	65
1.19	Clay stone	15	20
1.20	Mud stone	1	2
1.21	Steatite	108	452

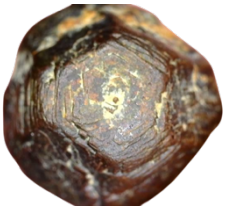
No	Material	Beads of 2003 Excavation	Beads of 2004 Excavation
2	**Organic material**		
2.1	Ivory/Bone	-	4
2.2	Shell	15	25
2.3	Terracotta	89	215
3	**Siliceous material**		
3.1	Glass	1	1
4:	**Metal**		
4.1	Bronze	7	13
4.2	Gold	1	1
4.3	Tin	-	4
5:	**Unidentified**	**1**	**2**

Table 2 - Material-wise number of beads from Gandi Umar Khan

[Below, on the next two pages: Fig. 3 - Various shapes of different material used for bead making at Gandi Umar Khan]

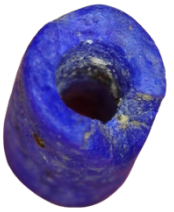

Agate


Carnelian


Garnet


Marble


Turquoise


Lapis Lazuli


Jade


Jasper


Quartz


Serpentine


Alabaster


Slate


Amazonite


Calcite


Soap stone


Steatite

Fig. 3 - Various shapes of different material used for bead making at Gandi Umar Khan (Photos by the Author/s).

Artifact type	Total Artifacts	Raw material	Unfinished beads
Terracotta Beads	304	/	11
Steatite, Lapis, serpentine, Garnet, Agate, carnelian, jasper etc. beads	1125	38	58
Copper/ Bronze, tin beads	24	/	/
Gold beads	2	1	/
Shell beads	40	5	6
Bone/ivory	4	/	/
TOTAL	1499	44	75

Table 3 - Gandi Umar Khan's unfinished beads and raw material from all periods.

Bead material	Total No.	Length class/category
Agate	63	2,3,4,5
Carnelian	122	1,2, 3,4,5
Garnet	1	3
Marble	10	2,4,5
Turquoise	4	2,3
Lapis Lazuli	133	1,2,3,4,5
Jade	1	4
Jasper	28	3,4
Quartz	12	2,3,4
Serpentine	9	2,3,4,5
Alabaster	13	2,3,4,5
Slate	30	3
Amazonite	1	3
Calcite	3	4,6
Soap stone	2	2
Sandstone	13	2,3,4,5
Silt stone	5	3
Limestone	77	2,3,4
Clay stone	35	2,3,4,7
Mud stone	3	2,3
Steatite	560	1,2,3,4,5
Ivory/Bone	4	2,3,4
Shell	40	2,3,4
Terracotta	304	1,2,3,4,5,6,7
Glass	2	Raw material
Bronze	20	1,2,3,4,5
Gold	2	2,3
Tin	4	1,2

Table 4 - Classifications of Bead Materials with Lengths Category.

The table 4 presented above demonstrates the categorization of bead materials based on their length, indicating that stones with lower hardness, such as terracotta, exhibit a wider range of length variations. This shows how terracotta is widely used and popular as a bead material. However, steatite is a soft stone as well and may thus be made into beads of various sizes. There are no long beads since the stone is too fragile to be produced in such a length due to the risk of it breaking. The shells, ivory and bone, which fall into different length groups. According to the above table, bronze beads are also thought to be attractive because they can be bendable, allowing for more complex and compact manufacturing than would be possible with exceedingly lengthy sizes. The most widely used beads in the Indus Valley Civilization were agate, lapis lazuli, and carnelian; as a result, we find here sophisticated beads in a variety of shapes and sizes.

Upon examination of the size distribution of beads shown in Table 5, it becomes evident that throughout the early Bronze Age, there was a limited range of options in terms of bead sizes. The prevailing trend was to go for standardised sizes that were simple to produce and did not need sophisticated technological advancements. In contrast, subsequent stages have a greater prevalence of micro beads and short beads, particularly with the incorporation of elongated beads, in comparison to the earlier phases.

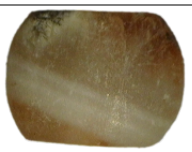
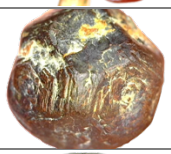
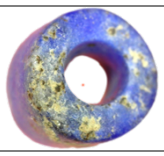
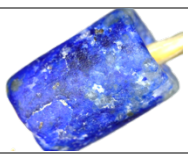
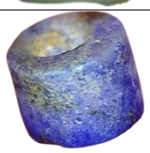
Period	Very very short	Very short	Short	Medium	Long	Very long	Very very long	Total
Layer 19 Tochi	0	Number	0	0	0	0	0	0
		%						
Layer 18 & 17 Transitional	1	10	7	3	1	0	0	22
% age	4.5%	45.45%	31.82%	13.64%	4.55%			
Layers 13, 14, 15, & 16 Kot Diji	7	35	16	8	0	0	0	66

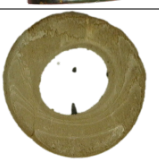
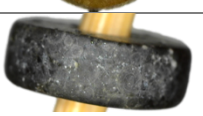
% age	10.61%	53.03%	24.24%	12.12%				
Layers 1- 11 (A, B, C) Mature	237	422	352	100	39	15	31	1196
% age	19.82%	35.28%	29.43%	8.36%	3.26%	1.25%	2.59%	

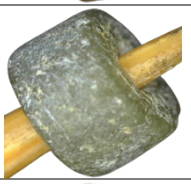
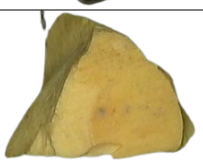
Table 5 – All beads Distribution by Sizes

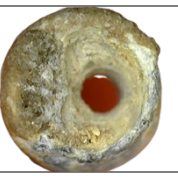
This demonstrates that throughout the late Bronze Age, there was advancement in technology that allowed for the production of a greater variety of sizes in a more sophisticated manner. The following table 6 illustrates the progression towards a higher standard of living, as seen by the representative assortment of beads over different time periods.

[Below, on the next five pages: Table 6 – Representative Types of Beads in Each Material per Period]

Bead material	Layer 19 Tochi Gomal Phase	Layer 18 & 17 Transitional Phase	Layers 13, 14, 15, & 16 Kot Diji Phase	Layers 1- 11 (A, B, C) Mature Harappan Phase
Agate	-			
Carnelian	-	-	-	
Garnet	-	-	-	
Marble	-	-	-	
Turquoise	-	-	-	
Lapis Lazuli	-			
Jade	-	-	-	

Bead material	Layer 19 Tochi Gomal Phase	Layer 18 & 17 Transitional Phase	Layers 13, 14, 15, & 16 Kot Diji Phase	Layers 1- 11 (A, B, C) Mature Harappan Phase
Jasper	-	-	-	
Quartz	-		-	
Serpentine	-	-		
Alabaster	-	-		
Slate	-	-		
Amazonite	-	-		-

Bead material	Layer 19 Tochi Gomal Phase	Layer 18 & 17 Transitional Phase	Layers 13, 14, 15, & 16 Kot Diji Phase	Layers 1- 11 (A, B, C) Mature Harappan Phase
Calcite	-	-	-	
Soapstone	-	-	-	
Sandstone	-	-		
Silt stone	-	-	-	
Limestone	-			
Clay stone	-			

Bead material	Layer 19 Tochi Gomal Phase	Layer 18 & 17 Transitional Phase	Layers 13, 14, 15, & 16 Kot Diji Phase	Layers 1- 11 (A, B, C) Mature Harappan Phase
Mud stone	-	-	-	
Steatite				
Ivory/Bone	-	-	-	
Shell	-			
Terracotta	-			
Glass	-	-	-	
Bronze	-	-	-	

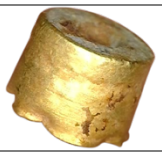
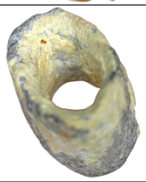
Bead material	Layer 19 Tochi Gomal Phase	Layer 18 & 17 Transitional Phase	Layers 13, 14, 15, & 16 Kot Diji Phase	Layers 1- 11 (A, B, C) Mature Harappan Phase
Gold	-	-	-	
Tin	-	-	-	

Table 6 - Representative Types of Beads in Each Material per Period.

5. Discussion and Conclusions

At Gandi Umar Khan, an enormously diverse and valuable bead assemblage was uncovered. The majority (about 427) of the beads in this collection were crafted of semi-precious stones. The diversity in the semiprecious stones at Gandi Umar Khan reflects the local craftsmen's most and least preferred semiprecious stones, such as carnelian, agate and lapis lazuli, which were more preferred than jasper, quartz, serpentine and turquoise. The first impression is that these beads from Gandi Umar Khan exhibit significantly higher craftsmanship. Due to the lack of natural stones with appropriate structure, bead makers at Gandi Umar Khan developed inventive techniques for producing a wide range of created beads. The techniques and designs used to make beads at the Gandi Umar Khan site offer a distinctive viewpoint on the complex history of the community.

Terracotta and steatite make up the majority of the beads assemblage that was a readily available and simple-to-manufacture substance in the nearby area. Only 136 additional stones, 4 bones, and 40 shell beads have been identified, despite the fact that these materials are found locally or regionally. The beads assemblage has 24 copper alloy beads, 2 glass beads, and 2 gold beads, which is fewer than the quantity of mineral beads. Gandi Umar Khan's trading commodities were most likely engraved carnelian beads. This archaeological investigation of Gandi Umar Khan states that individuals of Gandi Umar Khan not only obtained many exotic beads

through far-reaching exchange contacts, but also that beads were locally manufactured from marine shells and various semi-precious stones whose raw materials would have been sourced from other regions. Furthermore, the advanced-manufactured beads might have been exported to other various regions.

At Gandi Umar Khan's site, the craftsmen made beads out of every material that was conceivable, including terracotta, semi-precious stones and valuable material, gold, bronze, and tin. The existence of very complex micro beads, a wide range of forms, and a vast diversity of raw materials and semi-precious stones that are utilized to make beads is intriguing. The presence of raw material, unfinished beads (Table 3), and some beads production tools have been found from the site constituting indications of bead making. It demonstrates how handcraft technique has advanced along with semi-precious stone import and export. It also reflects the socioeconomic prosperity of the Gandi Umar Khan community.

The bulk of the beads in the Gandi Umar Khan were simple, basic forms made of a variety of semi-precious stones, terracotta, ivory, bone, and shell, as well as a constrained number of siliceous material and metal, according to the technology available throughout the early and later Bronze Ages. It is believed that the rapid morphological and technological development of local beads did not start until the end of the middle Bronze Age, and was particularly pronounced throughout the late Bronze Age. The jewellery of the Bronze Age in the Gandi Umar Khan was part of a developmental continuum growth that spanned from the Neolithic Age to the mature Bronze era. If not for significant looting and other disruptions throughout the past, the bead assemblage would contain valuable artifacts and exhibit signs of a rich accumulation. In this work, we have attempted to highlight the value and need of doing a comprehensive examination of the beads discovered at a site.

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