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**NEW DISCOVERIES OF MIDDLE PALEOLITHIC HUMAN REMAINS
FROM THE “BAU DE L’AUBÉSIER (VAUCLUSE, FRANCE)”**

**NOUVELLES DÉCOUVERTES DE RESTES HUMAINS DU PALÉOLITHIQUE
MOYEN DU BAU DE L’AUBÉSIER (VAUCLUSE, FRANCE)**

Serge LEBEL ¹, Erik TRINKAUS ²

ABSTRACT

Excavations in Middle Paleolithic levels at the “Bau de l’Aubésier (Vaucluse)” during 2000 yielded a maxillary molar and a partial mandible from late Middle Pleistocene levels, plus a maxillary molar from the early Late Pleistocene. The Middle Pleistocene remains (Aubésier 10 and 11) have close morphological affinities to contemporaneous European human remains, and the Neandertal molar (Aubésier 12) falls well within Neandertal ranges of variation. The teeth are notable for a toothpick groove on Aubésier 10 and the large dental caries in Aubésier 12. The Aubésier 11 mandible exhibits extensive pathological alterations of the alveolar process, indicating serious impairment of mastication.

Keywords: Neandertals, Pre-Neandertals, Middle Paleolithic, Mandible, Teeth, Caries, Human Paleontology, Paleopathology.

RÉSUMÉ

Des fouilles dans les niveaux du Paléolithique moyen du Bau de l’Aubésier (Vaucluse) en 2000 ont livré une molaire supérieure et une grande partie d’une mandibule des niveaux du Pléistocène moyen tardif ainsi qu’une molaire supérieure du début du Pléistocène supérieure. Les restes du Pléistocène moyen (Aubésier 10 et 11) ont des affinités morphologiques avec les autres restes humains contemporaines d’Europe, et la molaire néandertalienne (Aubésier 12) est bien dans la variation des Néandertaliens. Sur Aubésier 10 se remarque un sulcus de cure-dent, ainsi qu’une grande carie dentaire sur Aubésier 12. La mandibule Aubésier 11 montre des altérations pathologiques au niveau des alvéoles, ce qui indique une mastication difficile.

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INTRODUCTION

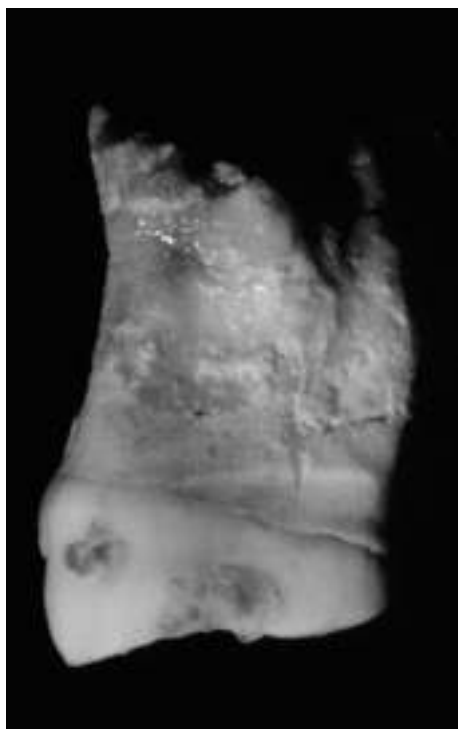
Excavations at different times during the twentieth century at the “Bau de l’Aubésier”, in the “Gorges de la Nesque, commune de Monieux, Vaucluse, France” (44° 05’ N, 5° 21’ E), yielded a series of isolated human teeth from the three stratigraphic complexes, including a Middle Pleistocene Middle Paleolithic one (Layer K), an early Late Pleistocene Middle Paleolithic one (Layer IV) and an Upper Paleolithic to recent one (Layer II) (Moulin, 1904; Lumley, 1973; Trinkaus *et al.*, 2000a). These remains, Aubesier 1 to 9, have been previously described morphologically and paleopathologically (Moulin, 1904; Lumley, 1973; Trinkaus *et al.*, 2000a,b). Ongoing excavations at the “Bau de l’Aubésier” during 2000 yielded additional human remains, including a maxillary molar from Layer I-3 (Aubesier 10), a partial mandible from Layer I-2 (Aubesier 11) and a maxillary molar from Layer IV (Aubesier 12) (Lebel *et al.*, 2001; Lebel & Trinkaus, n.d.). This note is intended as an illustrated preliminary announcement of these remains; more detailed descriptions will follow.

STRATIGRAPHIC CONTEXT

The Aubesier 10 and 11 remains, from Layers I-3 and I-2 respectively, derive from an archeologically rich stratigraphic complex immediately below the lower combustion zone, layer H-1. They are associated with a relatively laminar Typical Mousterian industry and a faunal macromammalian complex indicating a later Middle Pleistocene age for the deposits (Lebel *et al.*, 2001). This assessment is supported by thermoluminescence dating of Layer H-1 (Lebel *et al.*, 2001). The Aubesier 12 molar derives from Layer IV, which on the basis of its Middle Paleolithic lithic assemblage and associated macromammalian remains, derives from the early Late Pleistocene (Fernandez *et al.*, 1998; Fernandez, 2001).

AUBESIER 10

The Aubesier 10 maxillary molar consists of a slightly worn right M¹ or M² with minimal marginal postmortem erosion (*fig. 1*). Its buccolingual crown diameter of 12.0 mm is similar to those of late Middle Pleistocene (300 to 100 ka B.P.) European maxillary molars (M¹: 12.3 ± 0.9, N = 14; M²: 12.7 ± 0.8, N = 14). It is notable for its pronounced taurodontism, in which the clefts between the roots are 72.7%, 75.3% and 79.2% of the maximum height of the root; this represents expansion of the pulp chamber, as is evident between the root tips, and not merely bridging between separate roots. In

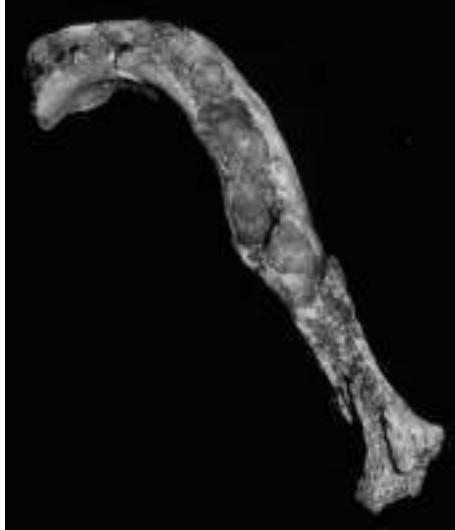


addition, the tooth presents a clear mesial interproximal “toothpick” groove (or abrasive non-carious cervical lesion [Levitch *et al.*, 1994; Ungar *et al.*, 2001]), broadest (2.3 mm) at its lingual end and tapering off buccally (*fig. 1*). It is shallow, polished, has sharp margins, and exhibits fine buccolingual wear striae within it.

Fig. 1 - Mesial view of the Aubesier 10 right M¹ or M², showing the clear toothpick groove extending from the lingual side of the cervix.

AUBESIER 11

The Aubesier 11 mandible is preserved from the left C₁/P₃ interdental septum to the beginning of the condyle, with minor damage to the right symphyseal area (a postmortem crack with slight separation of the adjacent pieces) and to gonion, plus loss of the coronoid process (*fig. 2 to 4*). The mandible presents a series of morphological features that align it closely with later Middle Pleistocene Neandertal-lineage specimens, including a rounded and strongly retreating anterior mandibular symphysis, the incipient presence of a mental trigone, a modest *planum alveolare*, an inferior lingual torus, the anterior marginal tubercle at P₄/M₁, the mental foramen at the level of the P₄/M₁ interdental septum extending to the M₁, a short and broad corpus, a prominent horizontal lateral eminence, a distinctive retromolar space in *norma lateralis*, an open mandibular foramen (the absence of lingular [horizontal-oval] bridging), a prominent superior medial pterygoid tubercle, and the intersection of the mandibular notch crest with the



middle third of the mandibular condyle. These features occur in between 50% and 100% of late Middle Pleistocene Neandertal lineage mandibles (Lebel *et al.*, 2001). In particular, Aubesier 11 resembles morphologically most closely the late Middle Pleistocene “La Niche (Montmaurin)” 1 mandible, differing only in the presence of a clear retromolar space.

Fig. 2 - Superior view of the Aubesier 11 mandible.

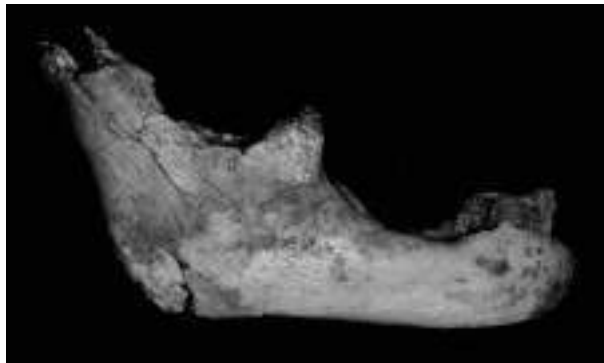


Fig. 3 - Lateral view of the Aubesier 11 mandible, showing the corporeal and ramal morphology and the resorption of the labial / buccal alveolar bone.

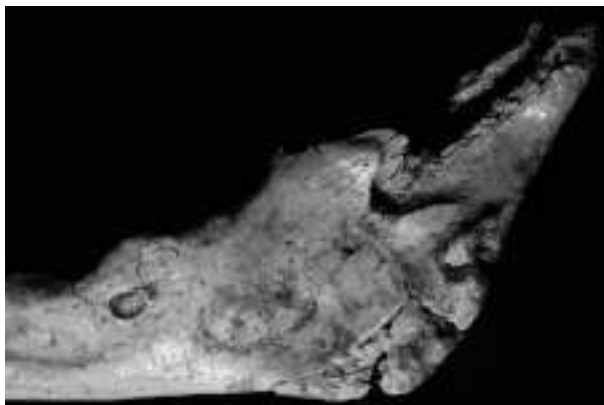


Fig. 4 - Medial view of the Aubesier 11 right mandibular posterior corpus and ramus, showing the morphological configurations of the medial pterygoid insertion and the mandibular foramen, plus the fenestration from the M₃ socket.

The Aubesier 11 mandible is most notable for its extensive pathological alteration of the alveolar process. The M_2 was lost antemortem, and many of the other teeth were probably lost prior to death. All of the labial alveolar bone from the left C_1 to the right M_3 and the lingual alveolar bone from the left mid- M_1 to M_3 was resorbed antemortem, and there are fossae from periapical abscesses in the vicinities of the incisors and the M_3 , including a lingual fenestration from the M_3 socket. Furthermore, the right C_1 and P_3 root tips remain within their sockets, approximately 1 cm below the preserved lingual alveolar bone, but experienced antemortem attrition. The etiology of these lesions remains unclear, but it is likely that the extensive alveolar resorption, dental loss, and abscesses were the products of antemortem trauma and/or dental attrition leading to extensive periodontal-endodontal lesions, whose presence would have made mastication painful and mechanically ineffectual. In this, Aubesier 11 is unique among known Middle Pleistocene or earlier human specimens in having significant impairment of mastication.

AUBESIER 12

The Aubesier 12 maxillary molar consists of a moderately worn right M^1 or M^2 with postmortem loss of a chip of enamel from the distobuccal crown corner and of most of the lingual root (*fig. 5*). The tooth morphology is unremarkable for a Neandertal M^1 or M^2 , and its buccolingual diameter (12.2 mm) is close to the means of European Neandertal M^1 s (12.0 ± 0.8 mm, $N = 25$) and M^2 s (12.5 ± 1.1 mm, $N = 18$). There is no evidence of taurodontism.

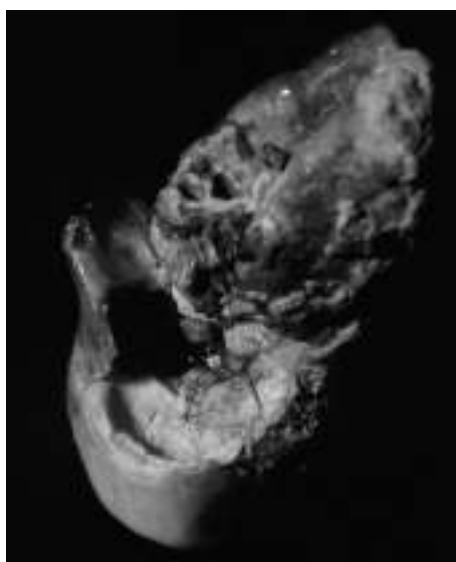


Fig. 5 - Distolinguoradicular view of the Aubesier 12 right M^1 or M^2 , showing the carious defect in the roots.

The Aubesier 12 molar is exceptional for its large root caries. The distolingual corner of the cervical half of the root has been eroded by a caries, which extends around the corner of the root, up into the crown, and into the pulp chamber. The internal surfaces are undulating and eroded, and the preserved margins are rounded. The opening reached a maximum diameter of 7.2 mm. The carious lesion is accompanied by hypercementosis around most of roots, indicating associated periodontal involvement in the lesion. This specimen joins a small but growing sample of Mediterranean Neandertals, including Banyoles 1, Kebara 27 and Aubesier 5 (Lalueza *et al.*, 1993; Tillier *et al.*, 1995; Trinkaus *et al.*, 2000b), with dental caries.

SUMMARY

The additional later archaic human remains from the “Bau de l’Aubésier” therefore add to our samples of late Middle and early Late Pleistocene human fossils from southeastern France. They are notable for the morphological affinities of the Aubesier 10 and 11 late Middle Pleistocene remains to contemporaneous European human remains, for the toothpick groove on Aubesier 10, the extensive pathological alterations of the Aubesier 11 alveolar process, and the large dental caries in Aubesier 12.

Acknowledgments

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