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## HISTORICAL CASE

# *Aenictinae*: The arthropodic suture



Fig. 1. Lateral view of *Aenictus* worker.



Fig. 2. Front on view of *Aenictus* worker. Note the nodes, the absence of eyes, the antennae inserted far forward on the head, and the absence of a suture between the pronotum and the mesonotum (the promesonotal suture).

'The suturing of wounds is practiced by some primitive peoples and may have been known to prehistoric man. One of the strangest suturing techniques, observed among primitive tribal cultures in such widely separated places as India, East Africa and Brazil, is the sealing of wounds using termites or ants. The edges of the wound are drawn closely together and the insect is allowed to bite through them both, firmly securing the flesh on two sides. Once attached, the insect's body is severed, allowing only the jaws to remain in place, holding the wound shut.'

***Aenictinae*: the army ant:** Taxonomic classification of army ants falls into the subfamily *Aenictinae*, from the Latin *exercitus* [training; a trained body of soldiers, army]. This subfamily contains a single genus *Aenictus* with a 140 species and subspecies. They are native throughout parts of Africa, China, Australia, New Guinea, with single species in Greece and Armenia. All species are "army ants", that is, they forage using large raiding columns and have a nomadic life style.

**Anatomy:** The army ants can be identified by their lack of compound eyes, the 10-segmented antennae, the mesosoma being attached to the gaster by two distinct segments, the

petiole and postpetiole and the lack of frontal lobes which makes the antennal sockets completely visible when viewed from the front. They are small, ranging from about 4.0 to 25.0 mm. The army ants' strength lies in their powerful jaws, which have narrow mandibles, and three or four teeth, with a distinct apical tooth and a preapical tooth, followed by at least four or five denticles. The most posterior tooth is much smaller than the apical tooth, and the mandibles have no gap between their posterior margins and the anterior clypeal margin. The result of this arrangement is that once the jaws are clamped they are practically impossible to pry open, and are capable of delivering a substantial force (Figs. 1 and 2).

**Technique of suture:** The wound is cleaned and the edges drawn closely together. The ant is then picked up by the body with the mandibles open, and placed over the laceration, where it is allowed to clamp the wound closed. The ant is then decapitated by twisting off its body, the head and jaws remaining as a temporary, natural suture. The process

is repeated until a row of ant head sutures are in place. Once the wound has healed, the ant sutures are removed by incineration.

**Discussion:** The use of army ants as sutures was not restricted to external wounds. Al-Bucasis (936–1013) in his book “Al Tasrif” claimed to use Arabian army ants for intestinal anastomoses. To this day, East African nomadic tribes such as the Masai and Akamba peoples still use the army ant to suture wounds. As natural as this technique is, it is not without complication. There are reports of ant bites

producing severe urticaria and even anaphylaxis. Ancient techniques have recently been revived with creatures such as medicinal leeches (*Hirudo medicinalis*) and fly larvae (*Lucilia serricata*) being used in contemporary medical and surgical practice. Can one envisage a use for this arthropodic suture in the developed world of the future?

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