

Tending the Vines:

Biomechanical Evidence of Laterality and Gendered Labor Division in Viticulture at Pessinus, Turkey

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The Site: Pessinus (c. 600 BC – AD 800)

Pessinus is situated in Central Phrygia, about 150 km south-southwest of Ankara (Fig. 1). The Phrygian settlement, famous for the cult of Cybele, developed into an important Roman city, embellished by successive Roman emperors with a temple for the Imperial Cult, a theatre, and a processional street ending in a monumental arch. Settlements exist on these plateaus overlooking the city's valleys, formed by several extended necropoleis that were built at least from the Roman to the middle Byzantine period (Fig. 2).¹



Figure 1. Map of Turkey indicating site location.

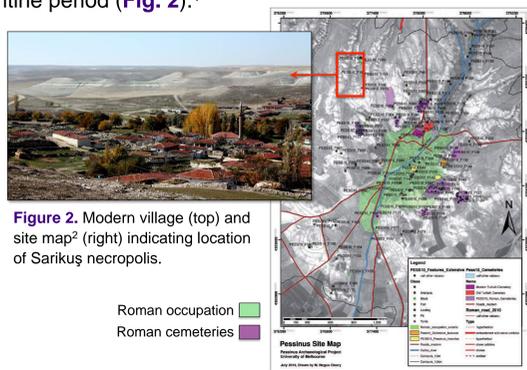


Figure 2. Modern village (top) and site map² (right) indicating location of Sarikuş necropolis.



Figure 3. Excavation of the tomb at Sarikuş.

The Tomb: Sarikuş Mevkiinde

Tombs of the northern Sarikuş necropolis are Late Roman (c. 300-400 AD) chamber or cist tombs, reusing earlier tomb spolia and oriented on an East-West axis.² Blocks of worked marble spolia were used as walls and

entrance steps into a chamber, then capped with another large marble block (Fig. 3). The Sarikuş tombs were used as collective burials, with 39 individuals being the largest number previously reported in any one tomb; however, many of these were heavily looted in the Byzantine period.²

This Sarikuş tomb contained 100 individuals, not including any of the remains recovered from looter spoil recovered downslope. Standard methods were used in aging and sex identification. There were 53 juveniles and 47 adults, 33 of which were known-sex: 16 females and 17 males between 17 to 60 years (Table 1).

Table 1. Known Sex Adults (MNI = 33)

Sex	Mean Age	MNI
Female	19.4 ± 2.6 yrs	4
Female	25.0 ± 4.9 yrs	2
Female	30.7 ± 8.1 yrs	2
Female	38.2 ± 10.6 yrs	3
Female	48.1 ± 14.6 yrs	2
Female	60.0 ± 12.4 yrs	3
Total Adult Females:		16
Male	18.5 ± 2.1 yrs	4
Male	23.4 ± 3.6 yrs	2
Male (SM-28)	28.7 ± 6.5 yrs	4
Male	35.2 ± 9.4 yrs	3
Male	45.6 ± 10.4 yrs	3
Male (SM-13)	61.2 ± 12.2 yrs	1
Total Adult Males:		17

Skeletal Sample: Pathophysiology

Of the known-sex adults, 12 of the 17 males presented with non-bilateral femoral-patellar polished and grooved eburnation in the knee as well as moderate ossification of the quadriceps tendon from partial tendon rupture at the superior border of the patella: nine on the right and three on the left (Fig. 4). These conditions are usually a result of repeated heavy load on the joint during bending and the quadriceps muscle rapidly contracting when regaining balance from a crouched position.

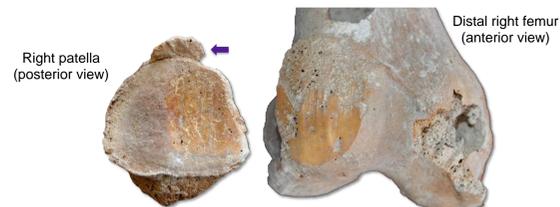


Figure 4. Femoral-patellar eburnation of the right knee joint in SM-13 with ossification of the quadriceps tendon (arrow) on the patella.

The 12 males also presented with osteoarthritis and eburnation in radio-humeral and radio-scaphoid surfaces of the wrist and elbow: nine on the right and three on the left (Fig. 5). This is often attributed to repeated heavy pressure or tensile load being placed on the joints during flexion and rotation.

The same 12 adult males also exhibited non-bilateral hypertrophic peroneal tubercles (HPT) on their calcanei (e.g., Fig. 6). Anatomically, peroneal tendons are held in place over the peroneal tubercle by the inferior fibular retinaculum (Fig. 7 and 8), all of which provide structural stability in activities that involve hyperflexion and eversion-adduction of the foot, such as kneeling or crouching.³⁻⁴

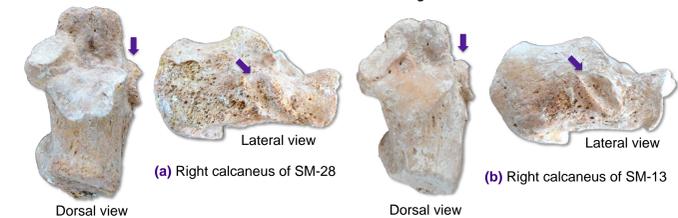


Figure 5. Osteoarthritis and eburnation of the radio-humeral and radio-scaphoid surfaces in the right elbow and wrist of SM-28.



Figure 7. Muscle and tendon anatomy.

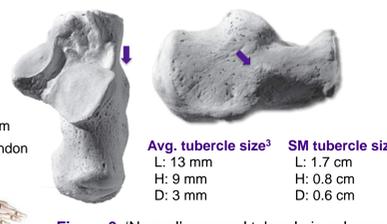


Figure 8. 'Normal' peroneal tubercle in calcaneus and average measured values.

HPT results when repeated daily stresses cause impingement of the tendons between the tubercle and distal fibula.⁴ Clinically, limited cases present with concave (15%) or tunnel (1%) forms³ of HPT, which are prominent among Sarikuş males (e.g., Fig. 6). Over time, these forms develop teno-synovitis, tendon rupture and entrapment neuropathy of the sural nerve.⁴

Body laterality refers to the preference for one side of the body over the other. Examples include left- or right-handedness and left- or right-footedness. The prevalence of human laterality is 88% favoring the right hand, 81% favoring the right foot, and 84% favoring the same hand and foot.⁵

Given the patterns of pathophysiology in the 12 adult males (Fig. 9) and the non-presence of these patterns among the adult females, we hypothesize that:

- laterality was present with 9 males presumed to be right-handed, and 3 left-handed; and,
- the repetitive activity carried out by the adult males is gender-specific.

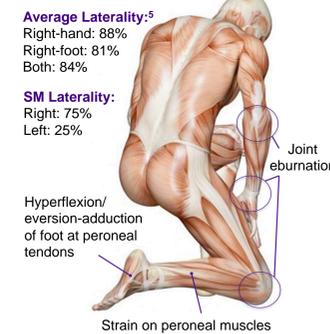


Figure 9. Patterns of pathophysiology and body laterality among the adult males.

Iconography: Anatolian Funerary Reliefs

Roman funerary reliefs from Anatolia demonstrate the gendered division of this labor in the region. The tombstone of husband and wife, Apphia and Memnon (Fig. 11a), depicts their prized possessions, divided along a vertical axis. She has a wool basket, perfume bottles, mirror, strongbox, loom and other weaving tools. He has a scroll, pen-case, hand-pick and pruning hook. The funerary relief for Philomela Kyrilla and her husband (Fig. 11b) depicts the wife's iconography on the right door, with weaving and beauty tools. The husband's door, on the left, shows a pruning hook, handpick, shovel, plough, and scroll. From this we see that farm tools were an important part of masculine identity in Roman Anatolia.

Vines are also a common motif on local funerary reliefs, but should not be considered simply decorative: several reliefs refer explicitly to vine-tending, showing farming tools beside an unstaked vine. Tending vines was so central to personal identity, that it is sometimes shown to the exclusion of portrait imagery or even inscribed names (Fig. 12).



Figure 11. Pruning hooks and handpicks as male iconography in the imperial Roman funerary reliefs of (a) Apphia and Memnon, from Kuruca (Ankara Museum), and (b) Philomela Kyrilla and her husband, from Sivrihisar (Pessinus Dig House).



Figure 12. Farming tools and unsupported vines on funerary reliefs from Eskişehir and Senriken.

Conclusion: Gendered Labor Division at Pessinus

To account for the appearance of skeletal remains from 4th-5th centuries AD, we have turned both to earlier relief images from the 2nd-3rd centuries AD, and to later, modern Anatolian viticultural practices. We are confident that this diachronic approach is justified by strong support from ancient texts, and the highly characteristic nature of the osteoarchaeological evidence. By implication, we have also suggested that Anatolian viticulture has, in some areas, remained largely unchanged for nearly two millennia.

When drawing all lines of evidence together – pathophysiology, methods of viticulture, and funerary iconography – it appears that vine-tending was a significant, intensive and frequent activity for local men, leaving traces of this gendered division of labor directly on the bodies of the males from the Sarikuş necropolis.



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