

A RARE SURGICAL PROCEDURE IN PLUTARCH

For Howard A. Reber, MD
In homage and gratitude

Among the essays included in Plutarch's *Moralia* is one entitled *Precepts on Health* ('Υγιεινὰ Παραγγέλματα, often cited by its Latin title *De Tuenda Sanitate Praecepta* [Mor. 122B–137E]). The sixteenth chapter thereof offers advice on appropriate exercise for scholars (φιλόλογοι), specifically on the correct use of the voice as a means of exercise (γυμνάσιον). At one point Plutarch warns against unnecessary straining of the voice and adds a cautionary tale (130F–131A):

Μόνον ἐκεῖνο φυλακτέον, ὅπως μήτε πλησμονὴν μήτε λαγνείαν μήτε κόπον ἑαυτοῖς συνειδότες ἐντεινόμεθα τῇ φωνῇ τραχύτερον, ὃ πάσχουσι πολλοὶ τῶν ῥητόρων καὶ τῶν σοφιστῶν, οἱ μὲν ὑπὸ δόξης καὶ φιλοτιμίας, οἱ δὲ διὰ μισθούς ἢ πολιτικὰς ἀμίλλας, ἐξαγόμενοι παρὰ τὸ συμφέρον ἀγωνίζεσθαι. Νίγρος δ' ὁ ἡμέτερος ἐν Γαλατία σοφιστεύων ἄκανθαν ἐτύγχανεν ἰχθύος καταπεπωκώς. 'Ετέρου δ' ἐπιφανέντος ἔξωθεν σοφιστοῦ καὶ μελετῶντος, ὀρρωδῶν ὑφειμένου δόξαν παρασχεῖν, ἐτι τῆς ἀκάνθης ἐνισχομένης ἐμελέτησε· μεγάλης δὲ φλεγμονῆς καὶ σκληρᾶς γενομένης, τὸν πόνον οὐ φέρων ἀνεδέξατο τομὴν ἔξωθεν βαθεῖαν. Ἡ μὲν οὖν ἄκανθα διὰ τοῦ τραύματος ἐξηρέθη, τὸ δὲ τραῦμα χαλεπὸν γεγόμενον καὶ βρευματικὸν ἀνείλεν αὐτόν.

Only we must guard against this—not to strain our voice too roughly when conscious of a full stomach or (recent) sexual intercourse¹ or physical fatigue. Many politicians and sophists experience this, being induced to engage in competitive debates, some through considerations of glory and ambition, others for pay or political contests. Thus our fellow citizen Niger, when a professional sophist in Galatia, happened to have swallowed a fishbone. But as another sophist had appeared on the scene from abroad and was engaged in declaiming, Niger, fearful that he give the impression of having yielded to the newcomer, himself gave public performances, although the fishbone was still stuck in his throat. A serious and persistent inflammation in consequence developing, as he could not endure the pain, he submitted to a deep surgical incision from without. The fishbone was then removed through the wound site but thereafter the wound itself, becoming troublesome and purulent, caused his death.

Anyone at all familiar with the truly remarkable advances made in Graeco-Roman surgery, with its surprisingly complex and sophisticated procedures covering a wide range of conditions,² will perhaps dismiss this account as inconsequential when considered within the larger framework of the history of ancient medicine and surgery.

¹ This may strike the modern reader as curious. The purpose of the clause is to signalize temporary states in which the body is already in a weakened condition. Three such are mentioned: (i) over-eating with the consequent stress it puts upon the digestive process, (ii) general physical weariness, and (iii) the act of coitus (for this meaning of *λαγνεία* see LSJ s.v. I). This was widely believed, from time immemorial, to 'drain' and debilitate the male. A good example of this outlook can be seen at *Od.* 10.296–301, where Hermes warns Odysseus about Circe who will 'invite you to go to bed with her. / Do not . . . refuse the bed of the goddess, / . . . but bid her swear the great oath of the blessed gods. . . / . . . so she will not make you weak and unmanned, once you are naked' (trans. R. Lattimore). Verse 301 in the Greek goes *μή σ' ἀπογυμνωθέντα κακὸν καὶ ἀνήνορα θῆῃ*. See also my remarks to Hes. *Erga* verses 586–8 in *CP* 75 (1980), 356. This piece of ancient folklore still survives in the practice of boxers and other athletes who abstain from sex while in training. (For convenience of exegesis in this note I have reversed the actual order of Plutarch's three examples. Observe that in the original Greek the sequence is from the more specific [fullness of food and drink, sex] to the more general [physical fatigue without further qualification].)

² For a concise but excellent account, see R. Jackson, *Doctors and Diseases in the Roman Empire* (Norman and London, 1988), ch. 5, 'The surgeon and the army' (112–37).

Nevertheless this passage does possess a certain interest of its own, as I hope to demonstrate.

To begin with, the account is no fiction; it may be taken as certain that Plutarch offers a factual report.³ The circumstantial details suggest as much⁴ and Plutarch was in a position to familiarize himself with the facts. Born in Chaironeia, he lived the better part of his life there and remained devoted to his native town. In this passage he calls Niger 'our Niger' (*Νίγρος ὁ ἡμέτερος*), clearly meaning 'our fellow-citizen Niger'. Any doubt about this is removed by *Mor.* 692B, where he refers to the same individual as *Νίγρος ὁ πολίτης ἡμῶν*, explicitly identifying him as a fellow townsman.⁵ Moreover the phrasing of both passages strongly suggests, if it does not prove, that Plutarch and Niger were contemporaries. Niger, it is true, died abroad,⁶ but he was apparently an individual of some local reputation and we may assume that the circumstances of his death were reliably reported to his home town, where Plutarch could have easily learned of them. Chaironeia was a small community. In sum, what has survived in Plutarch is no hypothetical textbook set of medical instructions, but an actual account of a genuine, and most uncommon, surgical procedure. It thus provides a small, but real, addition to our knowledge of ancient surgery.

In fact the illustrative value of Plutarch's account is out of all proportion to its brevity. For example, Plato in the *Gorgias* represents the famous sophist who gives the dialogue its name as praising rhetoric thus:

O Socrates, if only you knew the whole story, namely that rhetoric comprises and controls almost all the faculties. And I will tell you a powerful proof. For often already have I gone with my brother and other doctors to the home of some sick individual—someone who refused to

³ Konrat Ziegler, in his book-length entry on Plutarch in *RE* agrees: 'Auch hier liegt die Authentizität des Berichtes Ps klar zutage.' (*RE* 21.1, col. 679.32–3).

⁴ Here in brief is the proof. Plutarch's purpose in relating this anecdote is to illustrate the dangers inherent in straining one's voice when it is in no condition to take the stress. Declaiming with a fishbone stuck in one's throat is an extreme, and very illustrative, instance of this. All Plutarch need have done to make his point from the *rhetorical* viewpoint was to state the condition and its consequences, namely a serious surgical procedure followed by death. A very cautionary tale indeed. The too precise details, unnecessary for his primary purpose, almost detract from the total effect; they seem superfluous interruptions. To repeat: we are told that (i) Niger agreed to have surgery because a severe and indurated 'inflammation' had developed and the pain was unbearable; (ii) the surgical incision was 'deep' (*βαθεῖαν*); (iii) the bone was successfully removed; (iv) the wound-site became purulent (*ρηνυματικόν*, literally 'prone to flux', that is, 'emitting discharges') and it was this, not the surgery, that killed him. All this is very interesting medically, but hardly the sort of peripheral detail that a writer would *invent* for rhetorical purposes. Surely Plutarch records all this precisely because they were the facts as he had been told them and he had no wish to suppress them.

⁵ Niger was a common Roman cognomen; this particular bearer of the name is known to us only from the two passages in Plutarch.

⁶ *Γαλατία*, Galatia, could refer to ancient Gaul, but the general consensus that here it means Galatia in Asia Minor is far more likely to be correct. For the geographical limits of this latter Galatia see Bauer, Arndt, and Gingrich, *A Greek-English Lexicon of the New Testament and Other Early Christian Literature*² (Chicago and London, 1957) s.v. *Γαλατία* and the *OCD*³ s.v. *Galatia*. The place-name was used in two senses in reference to Asia Minor, both of a general region there and with specific reference to the Roman province of that name. The word Galatia ('Celtic Land') derives from the migrating tribes of Celts who occupied the region and settled there in the third century B.C. St Jerome asserts that when he visited Galatia in A.D. 372/3 a Celtic language was spoken there. There are indications that as late as the sixth century A.D. it was still spoken in outlying districts. The place and its inhabitants are most familiar from St Paul's Epistle to the Galatians.

drink his medicine or entrust himself to the doctor for cautery or surgery. Well, when the doctor was unable to persuade him, I succeeded in so doing—by means of no other art than rhetoric! (456A–B)

Dodds in his wonderful edition of the *Gorgias*⁷ has a good note on this passage (note to 456B4):

τερμείν ἢ καύσαι [= 'to cut or burn'], the twin horrors of pre-anaesthetic surgery. . . . For the patients' reactions cf. . . . Hippocrates, *de Arte* 7, where we are told that ignorance and fear often lead patients to resist treatment. Plato thought that a good doctor would himself persuade his patient to accept treatment, not by using rhetoric but by explaining to him the cause of his symptoms and the rational basis of the prescription proposed (*Laws* 720D, 857CD). This must have been the more necessary since in the absence of recognized professional qualifications doctors were (not without reason) distrusted. . . .

Here we perceive how much Plutarch can convey in a small compass. Observe first that it was ultimately jealousy and ambition that exacerbated Niger's condition. More importantly, we learn the patient's motivation for submitting to the surgeon's ministrations: he agreed to the procedure because he could not stand the pain. Surgery had become the lesser of two evils. One may well suspect that the patient did not consent immediately. We thus see illustrated in an actual case the kind of interplay between an ancient surgeon and his patient that Plato had alluded to centuries earlier in his literary dialogue. While it would be pompous to appeal to 'medical psychology' or indulge in other such grand-sounding phrases, we are grateful for the information. Note too in passing how adroitly Plutarch has executed this miniature character sketch by choosing just the right details to depict Niger as a real, and all too human, individual.

That fishbones and other obstructions were often accidentally swallowed in ancient times, even as now, hardly needs demonstration. It is our good fortune that several passages survive in the works of Greek physicians from which one can form a very good idea of the standard treatments for such cases. Thus Aëtius (sixth century A.D.) prescribes as follows (I excerpt from a fuller discussion):

εἰ δὲ περὶ τὰ παρίσθημα ἢ κατὰ τὴν ἀρχὴν τοῦ στομάχου ἄκανθα ἢ ὀστέον καταπαρῇ, εἰ μὲν τῇ ὄψει ὑποπίπτει καὶ ἔξω τῶν παρισθημάτων ἐξέχει τὸ πλεῖον αὐτῆς μέρος, τριχολάβῳ κομίζεσθω κτλ. (8.53 Olivieri)

But if an *akantha* or bone be stuck about the tonsils or at the start of the throat and if it is visible and the greater part of it is projecting out from the tonsils, let it be removed with tweezers . . .

Here the word translated 'tweezers' is *τριχολάβον* (also found in the forms *τριχολάβιον* and *τριχολαβίς*⁸), literally 'hair-seizer', which tells us its original function and approximate size and shape. It was first used for plucking hairs (from eyebrows, etc.) and then became an instrument of more general purpose like our tweezers. The procedure was simple and doubtless often effective. For a similar account see Paulus Aegineta (seventh century A.D.):⁹

⁷ E. R. Dodds, *Gorgias: A Revised Text* (Oxford, 1959, rev. 1966).

⁸ Olivieri prints, on his own conjecture, *τριχολαβίῳ* here. Since either form is acceptable, I do not understand why he abandons the MSS. The sense is not affected. (I assume *τριχολάβον* as the nominative of *τριχολάβῳ* here, since the neuter is attested elsewhere. The masculine form *τριχολάβος* is also possible; see below, n. 11.)

⁹ That Aëtius and Paulus date from the early Byzantine period, that is, some centuries later than Plutarch, should not give one pause. They are merely reproducing much earlier methods of treatment. For the widespread practice of derivative compilation on the part of the Byzantine

λβ'. Περὶ τῶν καταπαρθεϊσῶν ἀκανθῶν τῇ φάρυγγι.

Καταπείρονται πολλάκις ἐν τῷ ἐσθίειν ἀκανθαὶ ἰχθύων ἢ ἐτέρων τινῶν ἐν διαφόροις μέρεσι. τὰς μὲν οὖν ὑπ' ὄψιν γινομένας τοῖς ἰδίως ἀκανθοβόλοις προσαγορευομένοις ἐξέλωμεν, τὰς δὲ κατωτέρω πρὸς αὐτὴν τὴν καταπόθραν ἐτέρῳ τρόπῳ. τινὲς μὲν φασι χρῆναι μείζοντας ὄγκους καταπίνειν αὐτοὺς, οἷον καυλὸν θριδάκων ἢ ψωμοὺς ἄρτων, ἕτεροι δὲ σπογγίον καθαροῦ καὶ ἀπαλοῦ μικρὸν τι μέγεθος ἐκδήσαντα λίνῳ κελεύουσι καταπίνειν καὶ τοῦ λίνου λαβόμενον αὖθις ἀνασπᾶν καὶ τοῦτο ποιεῖν πολλάκις, ὅπως ἡ ἀκανθα πρὸς τὸ σπογγίον ἐμπαρεῖσα ἀνεχθῇ. ὁ δὲ Λεωνίδης κελεύει καταπλάσμασιν ἔξωθεν χρῆσθαι συμπεπτικοῖς, ὅποια τὰ δι' ὤμῃς λύσεως, ἵνα πυοποιηθεῖσα ἡ ἀκανθα αὐτομάτως ἐκπέσῃ. εἰ δὲ παρ' αὐτὴν τὴν ὥραν ἢ καὶ πρὸ τῆς κατὰ γαστέρα πέψεως ἐντύχοιμεν τῷ πεπονθότι, τοῦ καταπαρέντος ἀφανοῦς ἡμῖν τυγχάνοντος ἐμὲν ἐπιτρέφωμεν ἥτοι δακτύλων ἢ πτερῶν καθέσει· συνανενεχθήσεται γὰρ ἐνίοτε τοῖς ἐμουμενοῖς τὸ καταπαρέν. (6.32 Heiberg)

Here is the same passage in Francis Adams's classic version:¹⁰

Sect. XXXII.—ON THORNY SUBSTANCES FIXED IN THE PHARYNX

Thorns, or the bones of fishes, or other substances, are often swallowed in eating, and fix in different places. Wherefore, such as can be seen we are to extract with the forceps¹¹ for that purpose; but those which are lower down in the gullet we must manage differently. Some are of opinion that the patient ought to be made to swallow large morsels, such as the stalk of lettuces, or pieces of bread; but others direct us to bind a thread about a small piece of clean soft sponge and give it to the patient to swallow, and then taking hold of the thread to draw it up, and to do this frequently in order that the thorn may get fixed in the sponge and be brought up. Leonidas orders suppurative cataplasms to be applied, such as those from raw barley-flour, in order that the part may be converted into pus and the thorn fall out of its own accord. If we see the patient at the time of swallowing, before digestion has taken place in the stomach, and cannot perceive the substance which is fixed, we may order him to vomit by pushing the fingers or feathers down the throat, for sometimes the thing which is fixed will be brought up with the matters that are vomited.

It is thus abundantly clear that a variety of treatments existed for such obstructions. *None of them involved the surgeon's knife* as in the case of the unfortunate Niger of Chaironeia to whom I now return.

Where exactly the bone was lodged in the throat one cannot say, but it must have penetrated the alimentary tract too deeply to make oral extraction feasible—despite the impressive arsenal of ingenious instruments a Graeco-Roman doctor could

medical writers, see M. Wellmann, 'Demosthenes περὶ ὀφθαλμῶν', *Hermes* 38 (1903), 546–66, especially his conclusion on 566.

¹⁰ F. Adams, *The Seven Books of Paulus Aegineta. Translated from the Greek With a Commentary Embracing a Complete View of the Knowledge Possessed by the Greeks, Romans, and Arabians on All Subjects Connected with Medicine and Surgery*, 3 vols (London, 1844, 1846, 1847); the passage cited is from vol. 2, 300–1.

¹¹ The word 'forceps' here renders the Greek word ἀκανθοβόλος, literally 'thorn-thrower', found in the MSS of Paulus. This is surely an error for ἀκανθολάβος (or -λάβον, since both masculine and neuter forms of such compounds occur), 'thorn-seizer'. See LSJ s.vv. ἀκανθοβόλος II and ἀκανθολάβος. (The by-form ἀκανθολαβίς is also attested.) The corresponding passage in Aëtius (8.53) has τριχολάβον (or τριχολάβιον; see above, n. 8) for the name of the instrument performing this same function, which seems decisive. Comparable names of medical instruments from the root λαβ- are: λαβίδιον ('pair of tweezers' LSJ), λαβίς ('forceps' LSJ), λιθολάβος ('instrument for extracting the stone' LSJ), σαρκολάβος (also -λαβίς and -λάβον, 'surgeon's forceps' LSJ), σταφυλόλαβίς (not in LSJ; see H. Schoene, 'Zwei Listen Chirurgischer Instrumente', in *Hermes* 38 [1903], 283). This last word probably = σταφυλόγαρα, 'forceps for taking hold of the uvula' (LSJ s.v.). On these and other medical instruments, see J. S. Milne, *Surgical Instruments in Greek and Roman Times* (Oxford, 1907, repr. Chicago, 1970). He discusses both our passages (Aëtius 8.53 and Paulus 6.32) on p. 100, where he identifies ἀκανθοβόλος (sic)

possess, as we know both from written sources and from surviving specimens.¹² Hence the need for an 'external' (ἐξωθεν) incision. Curiously, the very word that I have been translating as 'bone' or 'fishbone' helps to illustrate the problem confronting the surgeon here. For Plutarch does not use the ordinary word for 'bone', namely ὀστέον (ὀστούν in Attic), or the diminutive of this, ὀστάριον, 'little bone'. Rather he employs a more precise term, ἄκανθα. The literal meaning of this word is 'thorn' or 'prickle', but it is often used to mean specifically the 'spine' or 'backbone' both of fish (often) and of other living things, including man. In the case of fish, of course, the word could also refer to other sharp and rigid ('spinous') bones.¹³ Whether fish backbone or not, what Niger swallowed was clearly a bone with such unpleasant features. This goes a long way towards explaining the difficulty of extracting it orally. Being sharp and hard it had gotten thoroughly lodged and any attempt to remove it manually, with or without the aid of an instrument, could have caused serious injury and only exacerbated the condition. As we have seen above, fishbones stuck in the throat were a common enough occurrence, then as now, and if a physician's assistance were required, there were standard methods for correcting the situation; a competent doctor would possess all the necessary instruments. The present case, requiring such invasive surgical intervention (that is, 'cutting'), was surely exceptional and the type of procedure involved (presumably an improvisation) must have been very rare. I am not aware of any other reference to such a procedure surviving from antiquity.¹⁴

Even so we are in a position to speculate with some confidence. It is well known that the Roman encyclopaedist Aulus Cornelius Celsus, writing under the emperor Tiberius (A.D. 14–37), included in his work eight books dealing specifically with medicine, *De Medicina*, the only portion of his encyclopaedia to have survived. Book 7 of the *De Medicina* considers surgery. For example, in 7.13 Celsus gives detailed instructions for the extirpation of a goitre both by the use of caustic medications and by the scalpel.¹⁵ In 7.12.2A he describes a tonsillectomy.¹⁶ But what is of most

as a 'pharyngeal forceps' and τριχολάβον as an 'epilation forceps' (used here as a pharyngeal forceps). For the τριχολάβον see his plate XXXII, fig. 1. Important also is R. Jackson, 'A set of Roman medical instruments from Italy', *Britannia* 17 (1986), 119–67 (with good illustrations of scalpels, forceps, hooks, etc.).

¹² See the previous note for references.

¹³ For ἄκανθα as applied to fish, see W. G. Arnott, *Alexis: The Fragments. A Commentary* (Cambridge, 1996), notes on fr. 49 (48K).2–4 (p. 169) and fr. 138 (133K).2–3 (p. 400). At fr. 49 Arnott remarks 'the ἄκανθα (v. 3), a term normally applied to the backbones of such creatures. . . . But ἄκανθα is used of other fishbones (e.g. the hair bones of ἀφναί and similar species, Ath. 8.357e) and even (in the plural) spiny parts of a fish's exterior . . .'. There is also much illustrative material in Aristotle; see H. Bonitz, *Index Aristotelicus*² (Berlin, 1870), s.v. ἄκανθα.

¹⁴ The closest description of which I am aware is to be found in the very next chapter of Paulus (6.33), which describes a laryngotomy (λαρυγγτομία). This too was a very rare surgical procedure. Paulus actually uses the term φαρυγγτομία (p.70, line 19 Heiberg, with λαρυγγτομία as a variant), but φάρυγξ means both 'throat' and 'windpipe' and context proves the latter meaning here.

¹⁵ 7.13.2: 'sed scalPELLI curatio brevior est . . .' ('But treatment by the knife is shorter. . .'). I cite Celsus, both Latin text and English translation, from the Loeb edition of W. G. Spencer (Cambridge, MA and London, 1938; repr. 1953, 1961). Spencer in a footnote ad loc. states 'Galen, VIII.53, mentions two cases of this operation in which the surgeon had injured the recurrent laryngeal nerves lying behind the thyroid gland and had so caused loss of voice.'

¹⁶ 'Now tonsils which have become hardened after inflammation . . . since they are enclosed in a thin tunic, should be scratched round with a finger and drawn out. But if they cannot be so detached they should be seized with a hook and excised with a scalpel [. . . hamulo excipere et scalpello excidere]; and the hollow then swilled out with vinegar and the wound smeared with something to check the blood [. . . et inlinere vulnus medicamento, quo sanguis supprimitur].'

relevance to our purposes is the fifth chapter of Book 7. W. G. Spencer, in a note at the beginning of this chapter,¹⁷ observes

Celsus here gives us the only information which we possess on the treatment of wounds in Roman warfare; the treatment which he describes was in most respects that followed by such well-known surgeons as Paulus Aegineta [5th–6th cent.], Albukasim [10th–11th cent.] and later Paré [16th cent.] and Italian surgeons of the Renaissance even after the introduction of gunpowder had largely altered the type of wound inflicted.

To see the relevance of this chapter to the present case one need only read the opening sentences of it:

Tela quoque, quae inlata corporibus intus haeserunt, magno negotio saepe eiciuntur. Suntque quaedam difficultates ex generibus eorum: quaedam ex is sedibus, in quas illa penetrantur. Quamvis autem telum extrahitur aut ab ea parte, qua venit, aut ab ea, in quam tetendit. Illic viam, qua redeat, ipsum sibi fecit, hic a scalpello accipit: nam contra mucronem caro inciditur.

(7.5.1A)

Missiles too, which have entered the body and become fixed within, are often very troublesome to extract. And some of the difficulties arise from their shape, some owing to the positions to which they have penetrated. Whatever the missile may be, it is extracted, either by the wound of entry, or through the spot towards which it is pointing. In the former case, the missile has already made a way for its withdrawal; in the latter the way out is made with the scalpel; for the flesh is cut through upon its point.

Celsus goes on to lay down general principles to be observed in deciding whether the missile is to be extracted by way of the original entry wound or by a new incision through which the missile may be thrust out. Particularly noteworthy is the following:

Summa autem utraque parte habenda cura est, ne vena, ne maior nervus, ne arteria incidatur. Quorum ubi aliquid detectum est, excipiendum hamo retuso est, abducendumque a scalpello. Ubi autem satis incisum est, telum eximendum est.

(7.5.1C)

In either case, the greatest care should be taken that no vein, nor any of the larger sinews, nor an artery, is cut. When any one of these is observed, it is to be caught by a blunt hook and held away from the scalpel. When the incision has been made large enough, the missile is to be drawn out.

In the case of Niger it is not possible for us to speak with anatomical precision as to the exact location of the *akantha* or bone; suffice to say that it was lodged somewhere in his throat. Obviously the surgeon was able to determine its position manually, make an incision at the appropriate place and extract the bone safely. He knew enough anatomy to avoid the pitfalls mentioned by Celsus (above). Celsus then proceeds to discuss in detail the proper procedures for extracting various kinds of missiles (arrows, broad blades, lead sling-bullets). I give one final quotation from him:

Nihil tam facile in corpus quam sagitta conditur, eademque altissime insidit. Haec autem eveniunt, et quia magna vi fertur illa, et quia ipsa in angusto est. Saepius itaque ab altera parte, quam ex qua venit, recipienda et praecipue quia fere spiculis cingitur, quae magis laniant, si retrorsus quam si contra eximatur.

(7.5.2A)

Nothing penetrates so easily into the body as an arrow, and it also becomes very deeply fixed. And this happens both because it is propelled with great force and because it is sharply pointed. Hence it is more often to be extracted through a counter opening than through the wound of entry, and especially so because it is generally furnished with barbs which lacerate more when drawn backwards than if pushed through a counter opening.

He goes on to explain how to deal with arrow barbs, mentioning several distinct surgical instruments in use for that purpose. An arrow and a fishbone, apart from the

¹⁷ Spencer (n. 15), 314, n.b.

place and manner of entry, have much in common and present comparable problems to the surgeon.

By studying Celsus's account of surgical procedures for arrows—I have omitted much therein—one can readily conjecture how Niger's surgeon must have performed his procedure. It required both anatomical knowledge and surgical skill. The unknown doctor successfully extracted the *akantha* through the incision, a *deep* one (as Plutarch explicitly states). As regards the requisite surgical instruments, the eminent authority on ancient medical instruments, Lawrence Bliquez, has kindly informed me (*per litteras*)

Niger's surgeon will have needed a scalpel to open, probably a couple of sharp hooks to retract the incision, one or more blunt ones to retract and protect nerves, veins, etc. and expose the bone, and finally the *akanthobolos* [*sic*] or some forceps (if not fingers promoting sepsis) to remove the offending bone.

That Niger did not survive was due not to the operation but to the consequent infection. What killed Niger was sepsis, evidence of which manifested itself at the surgical site. Plutarch's account is clear on that too, even though he himself could not have explained what was happening. Before the days of Pasteur and Lister all surgeons laboured under a most serious disadvantage in this regard and it would be unfair, and unhistorical, to fault them for what was beyond their control. In sum, the anonymous surgeon who treated the sophist Niger of Chaironeia was, *mutatis mutandis*, a worthy colleague of his modern counterparts.¹⁸

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¹⁸ I am grateful to Professors Robert B. Todd and Lawrence J. Bliquez for reading and criticizing an earlier version of this article. Professor Bliquez most kindly provided several important references.