

*Apollonius is commenting on Hippocrates' treatise On Joints and has come to the final section of that treatise, the resetting of a dislocated femur.*

In the same way he has described the strongest resetting after all [the rest], arranging numerous reductions in the case of the shoulder, so he has done the same in the case of the femur. For he came from simple [resettings] to an extension by instrument and the lever<sup>1</sup>, which have more forceful powers both in regard to the resetting of the all the other joints and to the reduction of the dislocated femur. Therefore, since Hippocrates next speaks about the construction of the instrument, first I will draw a picture below and then the reductions of the femur which come about through it. He explains as follows:

"It was said before that it is worthwhile for one who practices in a populous city to get a quadrangular<sup>2</sup> plank, six cubits long or rather more, and about two cubits broad; while for thickness a [single] span suffices. Next, it should have an incision at either end of the long sides, [so] that the mechanism may not be higher than is suitable. Then let there be short strong supports, firmly fitted in, and having a windlass<sup>3</sup> at each end. It suffices, next, to cut out five or six long grooves separated from each four fingers apart; it will be enough if they are three fingers broad and the same in depth, occupying half a plank, and there is no objection to their extending the whole length. The plank should also have a deeper hole cut out in the middle, about three fingers' breadth across the square; and into this hole insert, when it seems fitting, a post fitted to the hole and rounded in the upper section. Insert it, whenever it seems useful, between the perineum and the head of the femur. This post, when fixed, will prevent the body from yielding when the assistants pull from the feet; in fact, sometimes the post of itself is a substitute for counter-extension upwards. Sometimes also, when the leg is extended in both directions, this same post, so placed as to have free play to either side, would be suitable for levering the head of the femur outwards. It is for this purpose too that the grooves are cut, so that a wooden lever may be inserted in whichever may fit and bear upon them, applying pressure against the heads of the joints simultaneously with the extension, whether the leverage is required outwards or inwards, and whether the lever should be rounded or broad, for one form suits one joint, another [form] another [joint]. This leverage, combined with extension, is very efficacious in all reductions of the joints of the leg. As regards the present subject [sc. an internal dislocation of the joint], it is proper that the lever be rounded; but for an external dislocation of the joint, a flat one will be suitable. It seems to me that no joint is incapable of being reduced with these machines and forces."<sup>4</sup>

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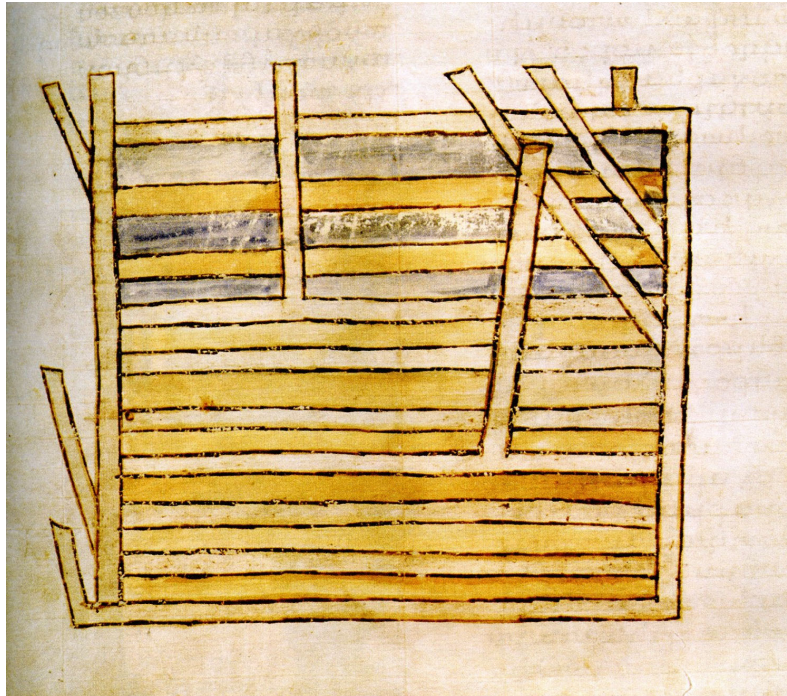
<sup>1</sup> μοχλείαν

<sup>2</sup> τετράγωνον: this word actually means "square", but the following dimensions -- 6 x 2 x 1 cubits -- indicate that is a rectangle, ὀρθογώνιον in Greek.

<sup>3</sup> ὀνίσκον

<sup>4</sup> [Hippocrates] *On Joints* 72.

Therefore Hippocrates' invention of the instrumental plank is made clear through these [words]. The construction of this instrument is drawn below in the following manner.



The construction of the instrument is this way. The resetting of the femur which happens on it will be represented for you in the following [passage]. For he not only thinks that the extension on the present plank and a lever suffice in the case of a inward dislocation of a femur but also [they suffice], when supports, fastened from either side, have a ladder-rung and the patient is stretched out on his side. He next continues about it in this way:

"One might find other ways of reducing this joint. This big plank might have two supports at the middle and to the sides, about a foot long, height as seems useful: one on one side, the other on the other. Then a crossbar of wood should be inserted in the supports like a ladder-rung. One might then insert the healthy leg between the props, and have the injured one on top of the ladder-rung, fitting exactly to its height and to the joint where it is dislocated. This is easily arranged: for the ladder-rung should be put somewhat higher than is sufficient, and a folded cloak spread under the patient, so that it fits. Then a piece of wood of suitable breadth and a length stretching to the ankle should be extended under the leg, going up as far as possible to the head of the femur; it should be attached to the leg in a suitable manner. Then, while the leg is being extended either by a pestle-shaped<sup>5</sup> rod or by any of these modes of extension [mentioned earlier], one should simultaneously force down the leg with the post attached to it downwards over the ladder-rung, while an assistant holds down the patient at the hip above the joint. For in this way the extension should raise the head of the femur over its socket while the leverage will thrust it back into its natural place. All these forcible methods of reduction are strong and all are able to overcome the injury if one

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<sup>5</sup> ὑπεροειδεῖ.

applies them rightly and well. Just as was said before, in the majority of cases the joint is reduced with much weaker extensions and a more ordinary apparatus."<sup>6</sup>

I am amazed at the Herophileans who embrace the notorious dissection, especially Hegetor. For in *On Causes* he speaks thus about the dislocation of the femur making clear the subject at hand: "And why do they not try to seek some other setting of the head of the femur besides those I've rejected<sup>7</sup>, so that whenever it dislocates it remains reduced in place? Those who only employ experience itself perceive by an analogy <joints> that are set in and remain in place, [I mean] the lower jawbone and the head of the arm and moreover the elbow and knee and each of the fingers and nearly the majority of joints which usually dislocate. For they can't explain<sup>8</sup> to themselves why this joint alone, when dislocated and again reduced, cannot remain in place. And when they apply that-which-has-happened-frequently in the case of the remaining joints<sup>9</sup>, they will come to think it reasonable that there will not be a better reduction so that the joint will remain in place, because they hold to what happens for the most part in the remaining joints. But [they would know] if they considered the cause from anatomy, that the ligament happens to process out of the head of the femur which is inserted into the middle of the joint socket. When it remains, it is impossible for the femur to dislocate; but when it is sundered it cannot be fused. And since a fusion has not happened, it is again impossible for the joint to remain in place. Therefore, once the cause is clear, avoid in general reducing a dislocated femur and do not proceed in impossible attempts."<sup>10</sup>

In these things Hegetor not only raves but also has confused friends of medicine as much as he is able. Still he has in no way overcome what was said by Hippocrates in *On Joints*, but constructs his attack in the previous passage rather sillily from un-agreed-upon points. In order that we not write too much, we will make summary notes against him. For those employing only experience itself, remaining on what has been observed empirically, neither agree that in general a femur dislocated and set right again dislocates, nor disregard a reduction again when the previous did not take. If what he wants were true, those using observation could not be [as they are] but, in the same way they understood the situation in the case of the remaining joints, so too is it reasonable that particular consequences in the case of the femur be understood. Therefore those who seek by reason do not want a better reduction to be understood but remain in their practice on the theorized point. Neither the fact nor the report of the ancients presents this [claim], that the thigh, when dislocated and set in, dislocates again by necessity. For if it was known to this one <person> or another, it would be a concern for Hippocrates too about the joints. And being such a lover of truth and making clear his particular views on remaining subjects he has explained about the thigh that in no way one could not overcome it in general, but contrawise he was [so] inspired somehow in the case of reductions of the femur that he made an instrumental invention.<sup>11</sup>

And still, in those cases unable to be overcome, in each kind of dislocation he has

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<sup>6</sup> [Hippocrates] *On Joints* 73.

<sup>7</sup> There is an untranslatable pun here on the Greek terms 'reject' and 'dislocate'.

<sup>8</sup> A pun on *epilogismos*, an Empiricist methodological principle.

<sup>9</sup> τῷ δὲ πλεονάκις ἐπὶ τῶν λοιπῶν ἄρθρων γινομένῳ

<sup>10</sup> Hegetor *apud* Apollonius of Citium *In Hipp. Art. Comm.* 3.23, 78.24-80.14 Kollesch and Kudlien (1965) = Empiricist fr. 276 D = Hegetor fr. 3 vS.

<sup>11</sup> Apollonius of Citium *In Hipp. Art. Comm.* 3.23, 80.14-82.6 Kollesch and Kudlien (1965) = Empiricist fr. 276 D.

set out the lameness consequent in the disabling of the limb. Reporting something similar in the case of the shoulder he says:

"To such people the shoulder was unable to be reduced"<sup>12</sup>

And again

"To such people as adults the shoulder dislocated and was not reset"<sup>13</sup>

If he ever says that the dislocation of the femur could not be overcome, he admits again that the opposite happens. For he does not entitle the event 'in the case of an old dislocation of the shoulder', as if he could pass over the event in the case of the femur, and necessarily offers a prognosis of these things so that the censure of lay people can be avoided. But in the section on the resetting of the shoulder, at the end, he has written:

"So recent cases are reduced as rapidly as one would suppose, while old cases, only this method is able to reduce them."<sup>14</sup>

And he adds on in addition a few things in what follows:

"I think that it would reduce even an old dislocation of the arm. For what would leverage not help? I would suppose that it would not remain in place but would slip back into its old position."<sup>15</sup>

Therefore, if the femur, having been dislocated and set it in again, were not to remain in place, he would not have recorded many and varied<sup>16</sup> reductions for no advance of the art<sup>17</sup> nor would he have shied away from speaking the truth. For one must look at the fact that he stands in such matters especially on the side of truth<sup>18</sup> and charges down<sup>19</sup> against those doctors standing on the side of quackery<sup>20</sup> in resettings, about which he says in the very passages on the curvature of the spine:

"For, succussions on a ladder never straightened one case, so far as I know, and the doctors who use this method are chiefly those who want to make the crowd gape: for to such people it seems marvelous<sup>21</sup> to see a patient suspended or shaken or treated in such ways; and they always applaud these performances and never bother themselves about the operation, whether bad or good. As to the practitioners who busy themselves to this kind of thing, those at least whom I have known are incompetent."<sup>22</sup>

And going on he says again:

"I myself felt shamed to treat all such cases in this way, and that because such methods belong more to charlatans."<sup>23</sup>

Nonetheless after these things he writes out the technique, if there should be need to shake [the patient] on a ladder, and in no way shying away from the truth he writes as follows:

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<sup>12</sup> [Hippocrates] *On Joints* 12.

<sup>13</sup> [Hippocrates] *On Joints* 12.

<sup>14</sup> [Hippocrates] *On Joints* 7.

<sup>15</sup> [Hippocrates] *On Joints* 7.

<sup>16</sup> ποικίλια.

<sup>17</sup> φιλοτεχνῶν.

<sup>18</sup> φιλαλήθως.

<sup>19</sup> κατατρέχει.

<sup>20</sup> ἀλαζονικώτερον ἱσταμένων.

<sup>21</sup> θαυμαστά.

<sup>22</sup> [Hippocrates] *On Joints* 42.

<sup>23</sup> [Hippocrates] *On Joints* 42.

"It is disgraceful in every art<sup>24</sup>, and especially in medicine, to make a scene of much trouble, much display, and much talk, then do no good."<sup>25</sup>

So it was not the character of Hippocrates' soul<sup>26</sup> to be separate from the present subject, and in the case of the femur, it being necessary to admit some similar method, he has added nothing uselessly. Indeed, speaking about the first reduction he begins thus:

"Dislocation of the femur at the hip should be reduced as follows, if it dislocated inwards. It is a good correct method, and in accord with nature, and one too that has something arresting<sup>27</sup>, which pleases these sort of people for its subtlety<sup>28</sup>."

Hang the patient by his feet from a strap."<sup>29</sup>

But if this manner of reduction or some of those recounted by him were conceived for no purpose, he would have entirely explained [this fact], just as he also speaks thus concerning the straightening of the vertebrae.

"I wrote this for a reason: for those things also are good instruction which, after being tried and failing, explain also why they failed."<sup>30</sup>

But since it was not for mere curiosity that the consequences were recounted in the case of those femur bones unable to be overcome in their dislocation, we must examine what he says in the case of the femur dislocated to the rear. And just as in all the remaining cases, he wrote something similar in the case of the matter at hand.

"When the dislocation occurs in an adult and not reduced"<sup>31</sup>

And again

"In people from birth or somehow not growing where a dislocation occurs and is not reduced"<sup>32</sup>

If in the case of all dislocations of the femur it follows that [the dislocation] cannot be overcome, the circumstances of the subsequent lameness would not have been recounted in the case of those unable to be reset. But the explanations of those which can be reset become conclusive<sup>33</sup> that the dislocated femur can be reset. So that he not appear to be a doer-of-vain-works<sup>34</sup> in the case of those [dislocations] unable to be reset in their places, he went through them precisely and he thus adds with reservation<sup>35</sup>:

"One might say that such matters are outside medicine. Why indeed bother still with incurable cases? This is far from the case. The investigation of these matters too belong to the same system of reasoning<sup>36</sup>; it is impossible to separate them from one another. In curable cases we must fashion ways to prevent their becoming incurable, studying the best means for hindering their advance to an incurable state; it is necessary to understand the incurable cases to avoid harm by

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<sup>24</sup> τέχνη.

<sup>25</sup> [Hippocrates] *On Joints* 44.

<sup>26</sup> ψυχῆς.

<sup>27</sup> ἀγωνιστικόν.

<sup>28</sup> κομψεύμενος.

<sup>29</sup> [Hippocrates] *On Joints* 70.

<sup>30</sup> [Hippocrates] *On Joints* 47.

<sup>31</sup> [Hippocrates] *On Joints* 58.

<sup>32</sup> [Hippocrates] *On Joints* 58.

<sup>33</sup> συνακτικά.

<sup>34</sup> ματαιοπόνοος.

<sup>35</sup> ὑπεξαίρεσέως.

<sup>36</sup> γνώμης.

useless efforts. Brilliant and competitive<sup>37</sup> predictions come from diagnosing in what way, how, and when each case will end, whether it turns to recovery or an incurable condition."<sup>38</sup>

Since these things are so, if the femur, once dislocated and reset, does not remain in place, the doctor has verbally marked the matter 'incurable' so that we do not wander in error. Therefore are not those having the opposite opinion -- of the joints, of the nature of the sinews, of the entire account of these matters -- without experience<sup>39</sup>? For the doctor, in the case of joints easily or vice versa with difficulty dislocated and reset, asked for the natural foundation and the structure in its natural state and the hardness of the tendons or their relaxation with moistness, so that in the case of those dislocations of the femur, if it cannot be overcome, that this happens not on account of the separation of the tendon but on account of the natural weakness or relaxation of the tendons, just as he says that cattle have their joints weak by nature.

Well, so that I don't write too much, I will explain what he says about these matters briefly. In the beginning of the treatise in the case of the resetting of the dislocation of the shoulder, he writes by making a mention [of it]:

"[Know] that there are great natural diversities as to the easy reduction of dislocations. Socket may differ from socket, one having a rim easy to cross, the other less so; but the greatest diversity is the attachment of the tendons, which in some cases is yielding, in others constricted. For the moisture of the joints in individuals comes from the attachment of the tendons which may be slack by nature and easily tolerate extensions. In fact one may see many people who are so humid in their humors that they can dislocate and reduce their joints without pain. The state of the body makes some difference: in those who have the limb in good condition and are more muscular dislocation happens less and reduction is more difficult; but when they are thin and not muscular dislocation is more frequent and reduction easier. A sign of this is the following: the femurs of cattle dislocate from the socket when they are at their thinnest."<sup>40</sup>

These things underlie all joints in common and must be understood not only in the case of the shoulder. Well, no differently did he himself make this clear, connecting his argument:

"The heads of the femur and the humerus dislocate most similarly."

Then, continuing on he does not make mention of the separation of the tendon, but [speaks] about the head of the joints and the so-called cavities of the sockets, namely that they are alike, when he says these things here:

"For this reason it is not possible for the heads [of bones] to stand half out"<sup>41</sup>

He goes on:

"So as for the subject, [joints] are completely dislocated since otherwise they are not dislocated at all: yet even these joints spring away sometimes more, sometimes less from their natural position. This occurs more in the femur than in

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<sup>37</sup> ἀγωνιστικά.

<sup>38</sup> [Hippocrates] *On Joints* 58.

<sup>39</sup> ἀπείρως.

<sup>40</sup> [Hippocrates] *On Joints* 8.

<sup>41</sup> [Hippocrates] *On Joints* 61.

the humerus."<sup>42</sup>

I think the present excerpts sufficient as regards the structure. Since he left out a few things, I have added these. For establishing [the thesis] more generally in the case of all [joints] he says as follows:

"Among the tendons and muscles which surround joints or arise from them and hold them together, those who most frequently move in use are most capable of yielding to extension, just as the best tanned skins have the greatest elasticity."<sup>43</sup>

Therefore never would there be a separation from a tendon in the case of dislocations which becomes difficult to work with or even incurable, but rather it tends toward dislocation more. He makes this clear in the same passage:

"To sum up: dislocations and slipping vary among themselves in amount and are sometimes greater, sometimes much less. In cases where the slipping or dislocation is greater, in general it is harder to reduce; and if unreduced, the resulting lesions and disabilities are greater and more visible."<sup>44</sup>

With these things said, we must return to the present way of setting the femur from which we made our detour. For Hippocrates showed that in most cases a dislocated femur is easily reset without force, as he also made clear in the following:

"Methods of extension have been described earlier; employ whichever one may have available."<sup>45</sup>

In order that the work is assumed to be easy in the case of every resetting, he made clear the following way [of resetting]:

"There must be a strong extension both ways, the leg in one direction, and the body in the other; for if good extension is made the head of the femur will be lifted over its old seat."<sup>46</sup>

And a bit later he says

"But [practitioners] fail in extension. For this reason the reduction gives more trouble."<sup>47</sup>

So it's not in general but sometimes on account of the greater dislocation and some having lost the opportunity in their handling during the extension<sup>48</sup> that the dislocated femur does not stay.

In conclusion, recapitulating again the present passage rightly he concludes the reductions about the resetting of the dislocation of the femur in the following:

"Now, just as was said before, there is a great difference in the constitution of individuals, as regards the ease and difficulty in reducing their dislocated joints. Thus in some, the femur is put in without any apparatus, with a slight extension, such as can be managed with the hands; while in many, flexion of the leg at the joint and making a movement of circumduction reduces it. But the great majority do not yield to an ordinary apparatus. For this reason one should know about each case in every art and use them where they seem appropriate."<sup>49</sup>

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<sup>42</sup> [Hippocrates] *On Joints* 61.

<sup>43</sup> [Hippocrates] *On Joints* 30.

<sup>44</sup> [Hippocrates] *On Joints* 61.

<sup>45</sup> [Hippocrates] *On Joints* 71.

<sup>46</sup> [Hippocrates] *On Joints* 71.

<sup>47</sup> [Hippocrates] *On Joints* 71.

<sup>48</sup> Translating the conjectured text *καὶ<ροῦ> ῥυέντος δέ τιςιν*.

<sup>49</sup> [Hippocrates] *On Joints* 71.



"What should put first in all the practice of the art is how to make the patient well; and if he can be made well in many ways, one should choose the least troublesome. One who is not desirous of popular charlatanry would suppose that this is most humane and most in accord with the art."<sup>50</sup>

Indeed, in all these matters he necessarily and with a love for truth engages on the dislocation of the femur – so how does it happen, if having been reset [the femur] does not remain but dislocates again, that he remains silent? Ought he not explain the opposite event?

Therefore these are the things which must be said against Hegetor in the chief points about the dislocation of the femur, and it is necessary to make the resetting in the case of the femur dislocated toward the inside via the present instrumental plank in the way underlying in the diagram.



<sup>50</sup> [Hippocrates] *On Joints* 78.