



Surgical History

Fatal Wounding of the Byzantine Emperor Julian the Apostate (361–363 A.D.): Approach to the Contribution of Ancient Surgery

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Abstract. Byzantine surgery flourished from the early stages of the Byzantine empire (324–1453 A.D.). The first great Byzantine physicians, among the most eminent being Oribasius from Pergamun (fourth century), not only compiled anthologies of the works of ancient Greek, Alexandrian, and Roman physicians but added their own personal practical experience and observations. The circumstances surrounding, and the treatment of, the fatal abdominal wounding of one of the most renowned emperors of Byzantium, Julian the Apostate (361–363 A.D.), is examined based on historical accounts unknown in the broader medical bibliography, namely, the histories and chronicles of Byzantine writers. From this analysis it can be concluded that the emperor's physician, Oribasius, in all probability, applied knowledge of ancient Greek and Roman surgery to save his famous patient. The techniques of "gastrorrhaphy" and pharmaceutical confrontation of the wound in that era, adopted later by the surgeons of the Medieval West, seem to constitute noteworthy roots of modern surgery.

Byzantine medicine (324–1453 A.D.), an important link between Greek, Alexandrian, and Roman medicine on the one hand and Western European medicine on the other, was highly developed [1]. The practice of surgery especially was considerably advanced from the beginnings of the Empire owing to the advances in anatomic knowledge during the Hellenistic period when dissection of the human body was permitted. Early Byzantine surgeons based their knowledge on that of the physicians of antiquity but improved on their techniques through personal contribution and experience [2]. Later (during the tenth century), a case of separating Siamese twins by skillful surgeons was reported; the operation, carried out when one of the twins died, was successful enough to keep the other alive for 3 days [3]. Another operation indicating the advanced level of surgery was lithotripsy in the bladder in the case of lithiasis of the historian Theophanes (ninth century), 10 centuries before the first instance was reported by J. Civiale [4].

The first eminent Byzantine physician, Oribasius from Pergamun (325–403 A.D.) (Fig. 1), who studied medicine in the famous School of Alexandria, was personal physician of the Emperor Julian the Apostate (361–363 A.D.) (Fig. 2) whom he accompanied on his voyages until the latter's death. On Julian's command, Oribasius compiled the most important written medical material

in an anthology, the famous *Synagogae Medicae*, a complete encyclopedia of medical knowledge of his era. It consisted of more than 70 volumes [1]. Unfortunately, a considerable part of this ambitious work has been lost; but what remains affords us surprising insight into the richness of ancient medicine [2]. In this work Oribasius included a large number of operations, among them plastic and reconstructive techniques on the ears, nose, head, and cheeks [5], surgery on aneurysms [6], tracheotomy [7], and others based on the work of ancient Greek surgeons but enriched with his personal remarks, proving that he was not merely a compiler but an expert practitioner as well. These surgical sections are the most complete technical treatises from antiquity and allow reconstruction of the astonishingly developed surgical techniques of the Roman-Alexandrian epoch [2].

The Emperor Julian is better known in history for his struggles against the Christians and for his endeavors to restore a national pagan form of religion. Despite his being emperor of a Christian state established by Constantine the Great and his wife Helen, whom the church proclaimed to be saints because of their efforts to establish Christianity, Julian undertook a long, violent campaign to purge Christians, with restoration of idols and sacrificial ceremonies honoring the ancient gods. He had studied in the great National School of Athens and had been initiated into the sacraments of the Eleusinian Mysteries. He was highly cultured, made efforts to develop education especially in the medical field, and improved legislation, administration, and the financial basis of the state, thus proving to be an eminent and worthy emperor of Byzantium [8]. Julian was also the author of several significant literary works, especially epigrams, orations, letters, and historical treatises, which comprise a reliable source of the events of the empire [9]. Nevertheless, he has remained in history as "the Apostate," a term assigned to him by the Christians because he was baptized as a Christian and then turned against his church. ["Apostate" implies betrayal of and withdrawal from one's ideological group.]

Julian was killed in a battle against the Persians while leading his troops against the enemy. It was August, and because of the extreme heat he had removed his armor when a weapon, hostile or friendly, pierced his body directly [10]. Study and analysis of his contemporary and later histories and chronicles, unknown to the

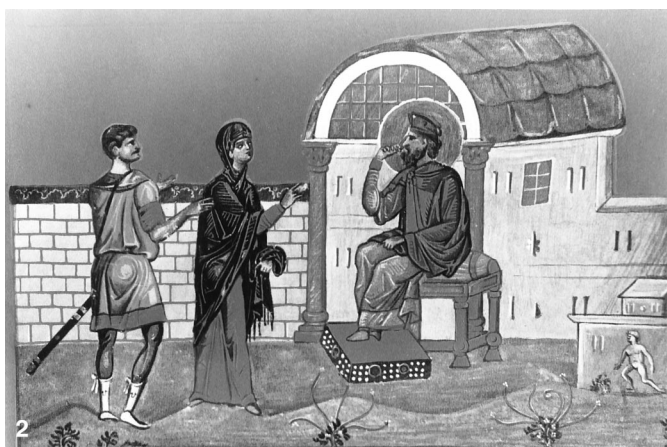
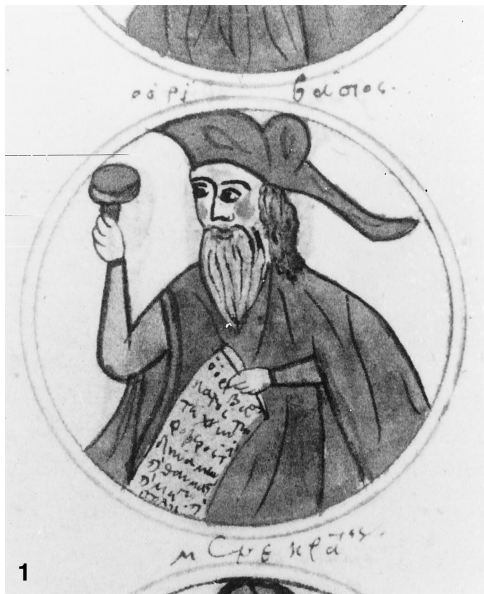


Fig. 1. Famous Byzantine physician and surgeon Oribasius. (Miniature from the fourteenth century Code 3632, f. 19 v. University Library of Bologna.) (Reprinted with permission of University Library of Bologna.)

Fig. 2. Emperor Julian the Apostate. (Miniature from the tenth century Code Vaticanus Graecus 1613, f. 100. Vatican Library.)

broader medical bibliography, discovered the circumstances of the emperor's death, detailed the therapeutic endeavors of his personal physician Oribasius, and provided an opportunity for an approach to the contribution of early Greek/Roman and Byzantine surgery, which greatly influenced European scientific concepts [1, 2].

Materials

The historian Ammianus Marcellinus referred to the fact that "a cavalryman's spear grazed the skin of Julian's arm, pierced his ribs, and lodged in the lower lobe of his liver. While he was trying to pluck this out with his right hand, he felt that the sinews of his fingers were cut through on both sides by the sharp steel. Then he fell from his horse, all present hastened to the spot, he was taken to camp and given medical treatment." The same writer continued



Fig. 3. Julian the Apostate wounded by the spear of the Saint Mercurius. (Miniature from the ninth century Code Graecus 510, f. 409. National Library of Paris.)

that the emperor wished to return to battle, but he was weakened by loss of blood and his strength was not equal to his will. Thus he lay still, having lost all hope for his life. The historian added that despite his condition he took part in an intricate philosophic discussion with the philosophers Maximus and Priscus about the nobility of the soul, and during this discussion the sutured wound suddenly opened wide causing severe hemorrhage, which provoked disturbance to the pulse and breathing. The emperor drank some of the cold water he had requested and then, in the gloom of midnight, passed quietly away [11].

Another reliable source, the ecclesiastical writer Philostorgius (fifth century), presented versions derived from earlier historical works. According to these texts, "a cavalryman severely wounded the emperor in the abdomen with his spear and injured the peritoneum and intestines; when the point of the weapon was pulled out, there followed an outflow of feces mixed with blood." His soldiers quickly placed him on a shield, using it as a stretcher, and bore him to his tent. There he underwent every possible medical treatment by the excellent and renowned physician Oribasius from Lydia (born in the town of Pergamum of Asia Minor), but the wound escaped all attempts at cure, and within 3 days the patient died. One of Philostorgius' versions, derived from the Life of St. Artemius, stated that the wound was to the "hypochondrium" [12]. Other later Byzantine chroniclers agreed on this location of the wound. Among them were Georgius Monachus (ninth century) [13]; Georgius Cedrenus (eleventh century) [14], who stressed the severe hemorrhaging that followed; Ioannes Zonaras (twelfth century) [15]; and Ephraim (fourteenth century) [16]. Other sources, such as Ioannes Malalas (sixth century) [17] and Chronicon Pascale (seventh century) [18], located the wound higher, in the area of the armpit. They repeated an account from some versions of Philostorgius, according to which Julian, after being wounded, removed blood from his wound and sprinkled it in the air toward the sun, saying "You defeated me, Christ; feast on this, Nazarene." Some chroniclers dealt with the accusation that he was struck by his own men, a rumor that perhaps was spread, "as visibility was limited during the battle due to the great cloud of dust which rose, causing blindness," as Ammianus confirmed [11] or because of the great rapidity of the events, as Philostorgius supposed [12]. Finally, imaginative Christian chroniclers wrote that St. Mercurius killed him at the request of Basil the Great [17] (Fig. 3).

Discussion: Medical Evaluation of the Sources

The most valuable and authentic historical sources—Ammianus, a contemporary historian who was witness to the war, and Philostorgius—presented a description from which it appears that the wound was caused by a cavalryman from a height, as Julian was fighting on foot. The direction of the wound was from the upper left toward the lower right. Thus the weapon pierced the ribs of the right side, the lower lobe of the liver, the peritoneum, and the intestines.

The location noted by later Christian chroniclers has no special significance, as the description is brief and these writers approached the event from a theological standpoint. All their stories seem mere fantasies of Byzantine religious chroniclers due to the attempts of Julian to reestablish the pagan religion and his persecution of the Christians. In their works are included more serious accusations, such as that he killed pregnant women, whom he then dissected and carried out hepatoscopy on their embryos, which he sacrificed to demons [14]. The *altera pars*, as expressed by Ioannes of Antioch, is that Julian was highly educated and wise, had a great mind, was indifferent to riches, and yet was ambitious [19].

The texts of Ammianus and Philostorgius confirmed that Oribasius made every therapeutic endeavor in the light of the knowledge of that time. Especially from the text of the former, it seems that surgical intervention was undertaken. No details are mentioned in the historical texts about the therapeutic endeavors of Oribasius; but every attempt known in medical texts must have been made, all the more so in the case of an emperor.

Confrontation of the abdominal wounds appears from the texts to have been difficult, which seems logical in an era before asepsis. Galen (second century A.D.) provided a description of such an undertaking [20], which was followed generally by the eminent Byzantine physician and surgeon Paul of Aegina (seventh century A.D.) in a separate chapter of his work *Epitome of Medicine* under the title “About the injuries of peritoneum and prolapse of the intestines or omentum, including a technique of gastrorrhaphy according to Galen” [21]. These medical views represent the level of knowledge of the surgeons during the era of the Emperor Julian. Galen (and later Paul) recommended, in cases of abdominal wounding, replacement of the prolapsed viscera, irrigation of the wound with several solutions, and suture of the wall with full-thickness sutures. This method is still generally used today.

Treatment of Abdominal Wounds by Greek, Roman, and Byzantine Physicians

Replacement of the Viscera

According to Galen, if part of the intestine is prolapsed, an attempt should be made to evacuate the air it may contain and to place the intestine back into the abdominal cavity. This is achieved by pressing the coils to push the air into the lumen of the remaining bowel and applying a sponge dipped in warm water or warm wine with high alcoholic content. If, despite these actions the intestine does not go back, the wound is extended with a straight “syrigotomon,” according to Galen or a blunt falciform-type lancet that cuts on one side, according to Paul (a form of fistular knife), a technique followed today. The patient is then placed in a suitable position with the legs raised and head lowered back if

the wound has occurred low in the abdomen, to the right if the wound is located to the left, and vice versa. The assistant to the surgeon must be skillful, so as to be able to replace the prolapsed coils and maintain them in the cavity, pressing them firmly with both hands and at the same time allowing a small area in which the surgeon can work until able to complete the suturing step by step. If the omentum has prolapsed and has become livid and black, the surgeon cuts it; but to avoid hemorrhage he passes a noose through its base to tighten it and then cuts the rest of it, leaving the stitch in place for it to fall as a result of suppuration of the wound [20, 21]. The latter phenomenon was considered a favorable sign, according to Galen’s pathology—*pus bonum et laudabile*. This view, which was held until the end of the Middle Ages, has again gained support because it indicates the possibility of the defense mechanism of the body.

Irrigation of the Abdominal Wound

The abdominal wound is irrigated with the aid of a clyster using lukewarm dark wine of high alcoholic content; irrigation is necessary when the intestine is severed and its contents have escaped [20, 21]. The antiseptic action of wine, known even from the time of the Homeric epics, today is attributed more to its phenols than its alcohol content [22].

Closure of the Abdominal Wall: Techniques

Galen recommended closure of the abdominal wall, which he called “gastrorrhaphy” (in Greek, the term means suturing the abdomen). The writer insisted that there must be contact of the peritoneum with the abdominal wall (“epigastrion”). He preferred the following technique: Stitching begins with the skin and the needle piercing the whole thickness of the skin and muscular wall (rectus muscle) but not the adjacent peritoneum, which the surgeon pushes away. The needle is then passed through the opposite margin of the peritoneum from the inner to the outer part and, following that, through the same adjacent margin of the abdominal wall. When the needle is removed, it is passed through the same margin at the same side, from the outer to the inner margin through the abdominal wall, again avoiding the adjacent peritoneum. It proceeds, passing from the inner to the outer part, piercing the peritoneum, muscular wall, and skin of the opposite margin. This sequence is repeated until the wound is fully sutured. The writer also described a second technique, “which has the aim of suturing similar tissues, that is peritoneum to peritoneum and epigastrion to epigastrion.” Although he considered this method simpler and quicker, he did not recommend it because he believed it did not adequately cover the peritoneum. According to this procedure, the needle is inserted from the outside, proceeds inward through only the skin and muscular wall of the lip nearest the surgeon; then, by reversing the needle (and bringing it to the opposite margin of the wound) he ensured that it pierced the two lips of the peritoneum. By reversing the needle again, it pierces the opposite muscular wall and skin from the inner to the outer margins. In this way, as Galen wrote, the two layers are sutured with one stitch.

These two techniques represent versions of full-thickness sutures, which are used today. The writer attached great importance to the distance between stitches, which must be close to support the intestines below; but excessive closeness must be avoided. He

recommended the same for the consistency of the thread; they must not be so hard as to tear the skin nor so soft as to break easily. The distance of the piercing from the margins of the wound must be average; that is, there must not be so great a distance that the margins do not make good contact or too close so as to tear the skin [20]; these requirements are generally accepted today.

Suturing abdominal wall wounds was also recommended in the work of Celsus, *De Medicina* (first century A.D.). That writer preferred stitches in layers, first of the skin and muscular wall and, second, of the parietal layer of the peritoneum, using for each layer two needles armed with thread and cross-suturing [23].

After the stitching, Galen suggested application of “the drugs for fresh wounds,” the well known enHEME drugs from the Corpus Hippocraticum and mainly inunctions of warm olive oil and injection of the same substance by the clyster into the abdominal cavity [20, 22].

Oribasius's Treatment of the Emperor Julian

It is likely that such treatment was carried out by Oribasius in the case of Julian. This technique of “gastrorrhaphy” would be familiar to the eminent physician because it is mentioned in his anatomic description of peritoneum [24]; the lack of a detailed description of it could perhaps be interpreted by the fact that only part of his ambitious voluminous work has survived. His *Epitomae*, especially, completed after 361 at the order of Julian, which summarized Galen's work and therefore in all probability would have included his techniques for repairing the injured abdomen, has been lost [25]. However, Aetius of Amida (sixth century) and Paul of Aegina used it as a source [25]. Hence a description of the latter concerning “gastrorrhaphy” derived from Galen is possibly based on this lost work, a hypothesis justified by the many gaps in the chapter describing the procedure.

A question might arise as to whether suturing the intestines could be achieved in Julian, as there is clear information from the historical texts that there was a wound to or severing of the intestines, with escape of their contents.

Paul of Aegina, copying the text of Galen, did not refer to this subject; nor did the text of Galen contain any information on this point [20, 21]. Both texts, however, refer to the fact that “the large intestines are curable and the small are difficult to cure; the jejunum in particular is incurable because of the number and size of its vessels and its thin wall which is full of nerves and because the jejunum is a receptacle for the bile emitted from the liver undissolved, as the latter is located very near.” The same opinion was previously expressed by Celsus, with the difference that the relative extract is completed by the author as follows: “When this [wound] happens we must first examine whether they [the intestines] are uninjured. If the smaller intestine has been penetrated, no good can be done. The larger intestine can be sutured, not with any certain assurance, but because a doubtful hope is preferable to certain despair; for occasionally it heals up” [23]. This common opinion of ancient writers coincides with the modern concepts according to which a wound to the large intestines has better healing and prognosis than one to the small intestine. Celsus referred to the technique with reservations, which were absolutely justified during an era when surgery was not advanced and peritonitis would have been a frequent complication of intestinal wounds. Moreover, this was before asepsis and antibiotics were known.

Consequently, it is possible that Celsus and Galen had a common source, as each had based his concepts on Hellenistic medical texts [1, 2]. It seems from the description by Galen that the rest of the concept, which justifies and interprets why the large intestines are more curable (greater possibility of being sutured), is missing. On the other hand, Galen and Paul of Aegina must have known the text of their predecessor, Celsus. It would thus be rational to conclude that in some cases the Byzantine physicians also sutured the large intestine despite the difficulty of the procedure and possibly their reservations.

Another case of abdominal wall wounding can be found in the texts of Byzantine historians and chroniclers. It concerns the wounding of Emperor Basil I the Macedonian (867–886), founder of the famous Macedonian dynasty of Byzantium, who was injured when a deer attacked him during a hunt and lacerated his abdomen. In this case no reference is made to abdominal suturing, owing to the fact that in similar cases of wounding by wild beasts such as the wild boar the Byzantine physicians preferred delayed healing, a form of treatment encouraging the appearance of pus, which they consider a more effective technique after wounding by beasts. The emperor Basil I died after 9 days with a high fever; the historians referred to the symptoms of pain, hemorrhage, diarrhea, great exhaustion, and finally the accompanying high fever. Probably the emperor succumbed to peritonitis [26].

Conclusions

Based on research of historical sources that referred to the fatal abdominal wounding of the Emperor Julian and study of the medical knowledge of his era derived from the texts of Celsus and Galen, we reached some conclusions concerning the possible surgical confrontation of wounds in the abdomen during the early Byzantine period, when surgery was impregnated by the concepts of Greek-Roman medicine. The combination of pharmaceutical treatment and surgical techniques for dealing with these wounds, referred to by Celsus and more meticulously by Galen, who transferred knowledge of Alexandrian and ancient Greek medicine, permit the supposition that the famous Byzantine physician Oribasius confronted the wounding of Emperor Julian according to the principles of treatment of his predecessors. It included replacing the intestines, perhaps suturing them where possible, irrigating the wound with wine, and detailed suturing of the abdominal wall according to the instructions and techniques derived from earlier medical texts. He added application of drugs suitable for enHEME wounds. However, a major hemorrhage occurred on the third day, possibly from an injury to the liver, which caused the wound to reopen despite the fact that Oribasius, an experienced surgeon, would have observed all the requirements of a *lege artis* suture. For this reason a historian remarked ironically that the wound ridiculed all the treatments of the eminent physician. Hemorrhagic shock followed, which brought about the death of the emperor. Because of the short time between the injury and his death, signs of peritonitis did not appear.

Résumé

La chirurgie byzantine a fleurie dès le début de l'empire Byzantin (324–1453 après Jésus Christ). Les premiers médecins importants byzantins, dont le plus éminents, Oribasius de Pergamun (4^e siècle), ont non seulement compilé des œuvres des médecins

grecques anciens, d'Alexandrie ou de Rome, mais ont ajouté leur expérience personnelle pratique et des observations à leurs écrits. On analyse ici les circonstances et le traitement de la plaie abdominale fatale d'un des plus connus des empereurs du Byzantin, Julien l'Apostate (361–363 après Jésus Christ), basés sur les récits historiques inconnus dans la bibliographie médicale, notamment à partir des histoires et des chroniques des écrivains byzantins. De cette analyse, on conclue que le médecin de l'Empereur, Oribasius, selon toute probabilité, a appliqué les connaissances de la chirurgie ancienne grèque-romaine afin de sauver son patient distingué. Les techniques de la gastrorrhaphie et le traitement pharmaceutique des plaies de cette époque, adoptées plus tard par des chirurgiens de l'Occident médiéval, semble constituer les origines de la chirurgie moderne.

Resumen

Ya en los albores del Imperio Bizantino (324–1453) la cirugía atravesaba una etapa floreciente. En el siglo IV, entre otros muchos notables médicos bizantinos, destaca Oribasius de Pérgamo, quien en sus antologías, no sólo recopiló el saber de los antiguos griegos y de los médicos de Alejandría y Roma, sino que añadió a estos saberes, sus observaciones y su experiencia práctica. Basándonos en las crónicas del Imperio Bizantino, se analizan las circunstancias que concurrieron en el tratamiento de una herida abdominal, de evolución fatal, sufrida por uno de sus más conspicuos emperadores: Juliano el Apostata (361–363). De este análisis se obtiene la conclusión de que el médico del emperador, Oribasius, utilizó, en un intento de salvarle la vida, los conocimientos de los antiguos griegos. Las técnicas de gastrorrhaphia y el tratamiento farmacológico de la herida fueron empleadas, mucho más tarde, por los cirujanos medievales de Occidente; constituyendo las raíces más importantes de la cirugía moderna.

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