

Articoli/Articles

A MEDICAL BANDAGE IN AN ITALIAN RENAISSANCE  
MUMMY  
(NAPLES, XVI CENTURY)

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SUMMARY

*A dressing was observed on the left arm of the mummy of Mary of Aragon (1503-1568), under her precious Renaissance clothes. It consisted of a true medical bandage, covering a large syphilitic cutaneous ulcer, with a sulphur-embedded wad still in situ. The bandage has a very peculiar shape, rather different from the usual dressings described in the contemporary medical texts: a central rectangular pad, used as compressing appliance, is provided with a sort of pocket containing ivy leaves. The function of the dressing was not only to cover and protect the ulcer, but also to apply a plant drug. This is the first case of ancient medical bandage studied directly on a mummified body.*

*Introduction*

In the 80's an extensive study was conducted on the remains of the Aragonese princes housed in the Sacristy of the Basilica of S. Domenico Maggiore in Naples<sup>1</sup>. On this occasion the mummy of Mary of Aragon, marquise of Vasto (1503-1568), was examined. Famous for

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her beauty, this noblewoman of the Italian Renaissance belonged to the intellectual and religious circles of Ischia, which also included the poetess Vittoria Colonna, a friend of Michelangelo<sup>2</sup>.

This artificial mummy (Fig.1a), in good state of preservation, appears as a classic funerary deposition, with the body still lying on its back, the arms in semi-flexed position and the hands crossed over the abdomen. The skin, of a leather colour, shows several and large cutaneous folds, caused by severe obesity.

### *Materials and Methods*

After removal of her precious Renaissance clothes, a dressing, still *in situ* on the left arm of the mummy, was observed (Fig.1b). It consisted of a true medical bandage, covering an ulcerous lesion of about 15x10 mm, with irregular margins, deep perpendicular borders and a brown-blackish surface (Fig.1c). In the interior of the ulcer, a little round-shaped mass was found, with a diameter of about 5 mm, irregular surface, hard consistence and aromatic smell. Chemical analyses mainly revealed sulphur, a substance largely employed in the treatment of cutaneous diseases at that time.

Another ulcer of 5x3 mm and three other minor ulcers were visible on the same arm, 3 cm below this lesion. The deltoid region of the right arm showed a superficial oval scar of 3x2 cm, with a lighter colour and many transversal striations. This scar is most likely the result of a previous, similar ulcer formerly healed at the time of death.

The macroscopic and histological features of the ulcer and, in particular, the presence of well-preserved treponemes, are peculiar of a luetic third-stage gum. Considering the historic period (XVI century) and the geographic position of Naples, which rule out the yaws<sup>3</sup>, it appears reasonable to assume that Maria suffered from tertiary syphilis, probably of venereal origin<sup>4</sup>. This was the first time treponemes had been identified directly in soft tissues of

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Fig. 1a: the mummy of Mary of Aragon with the bandage on her left arm;

Fig. 1b: detail of the bandage still *in situ*;

Fig. 1c: ulcerous lesion on the left arm with the sulphur mass inside.

ancient human remains; until then, the paleopathological diagnosis of syphilis had been made exclusively on the basis of skeletal evidence<sup>5</sup>.

The bandage, still in excellent state of preservation, that was applied on the patient's left arm to treat the ulcer, is of extreme interest and constitutes the study object of this article.

This finding is of great interest for the history of medicine and for pharmacology, considering that medical dressings are known only through the written sources; this is the first case of a bandage made in ancient times which has reached us.

### *Results*

The dressing is in linen and appears rather complex: it is formed by three bands sewn together (Fig.2a).

The external band is represented by a rectangular cloth of approximately 19x11 cm, from which four tapes of about 35, 32, 30 and 34 cm start out. These tapes, appropriately tied together, were aimed at fixing the bandage in the desired position. Originally, the external band was a unique rectangular piece of cloth of about 80-85 cm in length and 11 cm in breadth; the tapes were obtained by making two central longitudinal cuts. In the central part these cuts were stitched for about 2.5 and 3.5 cm to make them more resistant to the traction. Oblique and scattered stitching, in the form of a basting, running through the entire perimeter, and including the margins of the tapes, is visible along the tapes and around the cloth.

A rectangular padding of 9x7.5 cm, accurately sewn with oblique stitches, is placed in the central part of the cloth. It consists of a compress of considerable consistence, most likely formed by several pressed and starched layers of cloth. The compress is to be interpreted as a compressing appliance of the bandage (Fig.2b).

Two further linen cloths (ca 22x11 and 15x13 cm respectively), placed underneath the external band in contact with the skin, is made up of a sort of pocket applied to the described compress (fig. 2c). Three large intact leaves and some minor fragments of ivy were placed inside the pocket (Fig. 2d). The internal surface of the bandage in contact with the ulcer is stained and focally punched.

### *Discussion*

The medical texts contemporary to the dressing deal only marginally with the bandages and are still based on Galen's prescriptions. We can read the *Treatise on the Bandages* of Galen in the Latin translation of the XVI century physician Guido Guidi (1500 ca-1569)<sup>6</sup>.

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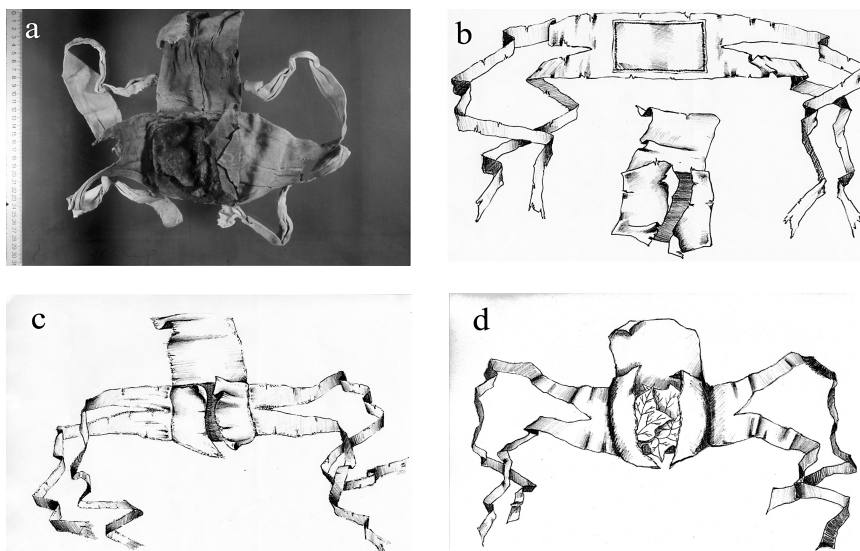


Fig.2a: the untied bandage;

Fig.2b: external band with the visible compress;

Fig.2c: bandage with the empty pocket;

Fig.2d: bandage with ivy inside the pocket (drawings made by Fabio Cini).

This work describes all the types of bandages used for the different parts of the body. They differ one from the other on the basis of shape. Those resembling the dressing of Maria are defined as “scrabs” and are formed by a unique piece of cloth divided at the extremities, with cuts in the longitudinal sense, as a result of weaving. In this manner the cloth can be divided more easily and can fasten more firmly what it ties<sup>7</sup>. However, these bandages are used to bind the head. For example, it is said that the cloth has to be divided into four parts: the central part is placed on the forehead; the anterior strips are directed towards the nape where are tied, while the other strips are turned up and knotted at the top of the head or turned down and knotted under the chin (Fig.3a and 3b)<sup>8</sup>. Considering the bandages reserved to the limbs, a single strip of cloth, rather long and without any cuts, was

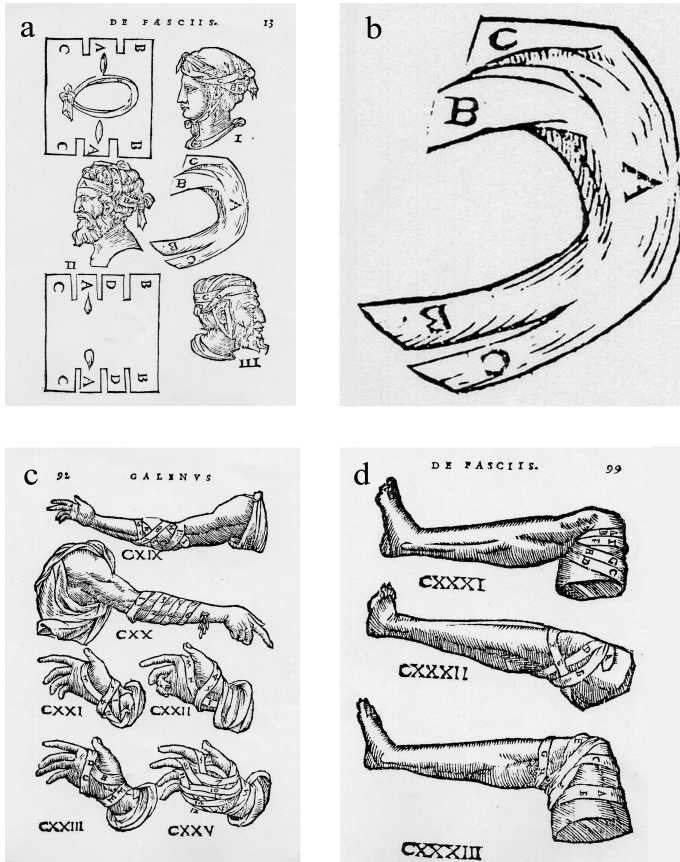


Fig.3a Bandaging of the head in Galen In: OBERTI A. (a cura di), *Il ritratto sulle fasciature di Galeno tradotto in latino da Vido Vidi ...* Pisa, Giardini, 1923, p. 27, fig.1. (Pisa Biblioteca Universitaria, su concessione del Ministero per I Beni e le Attività Culturali).

Fig.3b: a dressing similar to that of Maria, but used for the head, In: OBERTI A. (a cura di), *Il ritratto sulle fasciature di Galeno tradotto in latino da Vido Vidi ...* Pisa, Giardini, 1923, p. 79, fig.5. (Pisa Biblioteca Universitaria, su concessione del Ministero per I Beni e le Attività Culturali).

Fig.3c: bandages of the arms and hands in Galen; fig.3d: bandages of the legs in Galen, In: OBERTI A. (a cura di), *Il ritratto sulle fasciature di Galeno tradotto in latino da Vido Vidi ...* Pisa, Giardini, 1923, p. 84, fig.6. (Pisa Biblioteca Universitaria, su concessione del Ministero per I Beni e le Attività Culturali).

used. The band was wound round the arm or leg in various ways<sup>9</sup> (Fig.3c and 3d).

Ambroise Paré (1509-1590), surgeon of the XVI century, was the first to treat organically the subject of bandages, to which he dedicated an entire book<sup>10</sup>. He too follows the prescriptions of Hippocrates and Galen, and confirms that the dressing constituted of more bands sewn together to form different ends were used to bind the head.

Therefore the shape of the bandage applied to Mary's arm does not seem referable to the typologies described in the contemporary medical texts.

In this respect, an interesting reference can be found in the commentary to the Hippocratic treatise *De ulceribus* by Guido Guidi<sup>11</sup>. The author re-proposes the ancient bandaging system of sores and wounds, by placing a sponge of soft silk on which medicinal herbs and leaves are applied, so that the putrid humours present in the ulcers can be absorbed; the wound is treated thanks to the therapeutic properties of the used vegetables and, at the same time, an excessive pressure of the bandage is avoided. With regard to the dressing, he suggests to put the "cataplasm" between two strips of fine, clean and light cloth, so that the medicinal liquid, in which the outer piece of cloth is soaked, does not come into contact with the sore and does not cause irritation, acting on the ulcer as desiccant and astringent agent. As to the method of bandaging, he refers that the bandages have to be applied starting from the healthy part, namely from the lower or upper part of the wounded or ulcerated area, or from its damaged part, depending on the direction in which the corrupted humours need to be canalized.

The *hedera helix* belongs to the *Araliaceae* family. The use of ivy in the bandage of Maria (Fig. 5a) demonstrates that the soothing and healing qualities of this plant must have been known also in the XVI century. This is confirmed by contemporary medical and botanical works.

G. Fracastoro (1478-1553), in his *Syphilis sive morbus gallicus*<sup>12</sup>, includes ivy leaves distilled in “*vitrei intra concava vasisi cui collum oblongum est, venter turgescit in orbem*” among the herbs to compound ointments used to treat the syphilitic ulcers.

Giovanni Da Vigo (1450-1525), in his *Pratica cirurgica*, claims that “*the terrestrial ivy is frigid and dry, it purifies, desiccates and stimulates the regeneration of the flesh*”<sup>13</sup>.

Interesting references to the properties of ivy are reported in the work of Andrea Mattioli (1501-1577), a XVI century physician and naturalist, who collected all the knowledge about medical botany of that time in his famous commentary to the Herbal of Dioscoride Pedanio, ancient Greek physician and botanist of the I century A.D. The *De Materia Medica* of Dioscoride had a great influence in the history of medicine, remaining in use, with translations and commentaries, at least until the XVII century. In his translation of the Greek author, Mattioli says that “*the fronds of all species (of ivy), cooked in wine, treat all ulcers*”<sup>14</sup>. Again: “*the leaves of ivy are used very conveniently by those who have foruncles in the legs and in the arms, or in other parts of the body; therefore to put the leaves on them to help draw out the humours which converge there and fortify the place*”<sup>15</sup>. He also reports that the ivy leaves cooked in wine are prescribed by Dioscoride for the treatment of the “corrosive ulcers that are eating the flesh” and for the “sordid ulcers”. Interestingly, Mattioli advises to use ivy leaves as plaster on the damaged part, as adjuvant to the absorption and evacuation of the corrupted humours and moisture. Finally, he suggests to fill the fistulae and ulcers *cavernosa* with ivy juice and verdigris to treat them.

Ivy leaves cooked in wine are considered an efficient remedy for all species of herpes, another skin disease, by Gabriele Falloppio (1523-1562), one of the most important anatomists and physicians of the XVI century<sup>16</sup>.

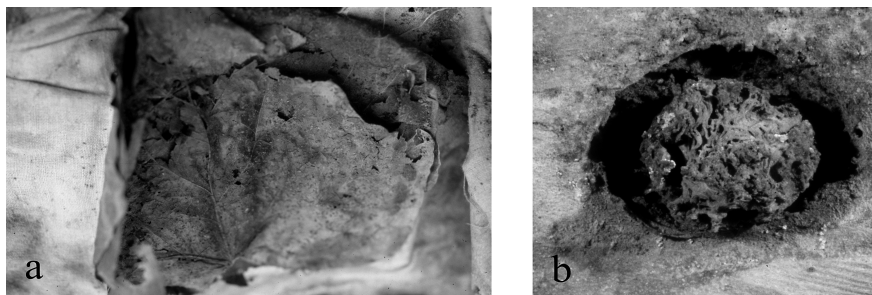


Fig.4a: the still intact ivy leaves inside the pocket; fig.  
Fig.4b: the sulphur mass at stereomicroscope

Giuseppe Donzelli (1596-1670), a XVII century physician and chemist of Naples, wrote an encyclopaedic inventory of medical and chemical-pharmaceutical remedies, with the description of several medical plants; as concerns ivy, he states that Girolamo of Trago approves the decoction made with wine and water, and that “*exulcerationi, vitiusque colli, & faucium gargarissatum conducit*”<sup>17</sup>.

The medicament of the ulcer was also represented by the sulphur mass inside (Fig.5b).

Fracastoro states that someone adds “*sulphura viva*” to treat the sores, suggesting an animal fat and sulphur-based ointment to be smeared on the entire body<sup>18</sup>.

Mattioli presents the therapeutic properties of the sulphur on the basis of its qualities, in particular heat, which makes it a desiccant and astringent drug, for this reason particularly efficacious in the dressing of the ulcers. For its “igneous” nature sulphur is in fact used for the treatment of itches, scabies and leprosy, “*because it purifies and cleans all kinds of illnesses, without affecting the inner part*”<sup>s</sup>, and avoiding, in this way, the humidity and purulent matter through the desiccant action of the fire.

Fallopio includes sulphur among the caustic substances, used mainly to cauterize<sup>20</sup>.

Donzelli prescribes sulphur to purify and to heal all sores. “*The sulphur balsam has the virtue of heating moderately: it conglutinates and consolidates the ulcers and sores, and it rapidly and marvelously recreating the flesh*”<sup>21</sup>.

In conclusion, the very particular shape of the bandage, rather different from those described in the contemporary surgical books, is to be related to the function of the dressing, which was not only to cover and protect the ulcer, but also to apply a plant drug, represented by the ivy leaves inside the pocket. It is noteworthy that the ivy leaves, with strong antiseptic power but very caustic, were not applied directly on the skin, but protected by the pocket, to perform their therapeutic effect without causing any irritation.

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