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Autoptic practices in 16th–18th century Florence: Skeletal evidences from the Medici family



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ABSTRACT

During the late Middle Ages and the Renaissance autopsy started to be practised for medico-legal purposes in order to investigate the causes of death. The other reason for dissecting a body was embalming, a diffused custom typical of the elitarian classes. The exploration of the Medici tombs in the Basilica of San Lorenzo in Florence offered the opportunity to investigate the practice of autopsy on these aristocratic personages of the Renaissance and Early Modern Age. A total of 25 currently skeletonized individuals, almost all of whom formerly artificial mummies, were exhumed. Accurate examination of the skeletons revealed evident signs of autoptic practices such as horizontal and oblique craniotomies, longitudinal and transversal cuts of the sternum, and sectioning of the sternal extremities of the ribs. In this group, women were treated differently to men at autopsy, as only men underwent craniotomy; autopsy and embalming were carried out also for the illegitimate members of the family and for subadults. The extremely rich documentary archives of the Medici family confirm that the corpses were in several cases submitted to autopsy. The present study offers important direct information on the 16–18th century autoptic practices that the court surgeons in Florence performed on the members of the elite class.

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1. Introduction

Dissection for anatomical studies and teaching reappeared in the Western world in Bologna, Italy, with the work of Mondino de' Liuzzi who performed his first public dissection in the presence of medical students and of other spectators in 1315. From this moment dissections were incorporated in the medical curriculum of the universities.

However, anatomical dissections should be distinguished from autopsies performed for medico-legal purposes, the first records of which go back to the second half of the 13th century (Busacchi, 1965). From the 14th century onward, the practice of autopsy for assessing the causes of death became increasingly common (Park, 1994). Another practice from the same period is embalming, per-

formed by removing soft tissue internal organs and packing them with preservative materials in order to ensure artificial mummification (Marinozzi and Fornaciari, 2005).

Although the history of autopsy can be reconstructed from the archival documents, skeletal remains providing evidence of autoptic practices can be used as a direct source of information. Significant overlap is possible between anatomical dissection and autopsy in osteoarchaeological remains, but a method for differentiating these two post-mortem investigative procedures has been recently proposed (Dittmar and Mitchell, 2015). Osteoarchaeological evidence of post-mortem examination from Europe has been reported, but these mainly date to the 18–19th centuries (Henderson et al., 1996; Chapman, 1997; Signoli et al., 1997; Hillson et al., 1998; Brickely et al., 1999; Brickley et al., 2001; Anderson, 2002; Hull, 2003; Boston, 2003; Miles et al., 2008; Boston et al., 2009; Mitchell et al., 2011; Chamberlain, 2012; Mitchell, 2012; Bugaj et al., 2013; Charlier et al., 2013; Western and Bakvalac 2015). The most ancient specimens with evidence of craniotomies come from France and are dated to the 13th (Charlier et al., 2013) and 15th centuries (Valentin and d'Errico, 1995). In the first case the procedure was focused upon obtaining an anatomical preparation;

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Table 1
Summary of autoptic records, craniotomies and thoracotomies in the Medici family.

Name	Date	Sex	age at death	Title	Autopsy (archive)	Craniotomy	Thoracotomy
Giovanni dalle Bande Nere	1498–1526	M	28	–	–	–	–
Maria Salviati	1499–1543	F	44	–	+	–	–
Cosimo I	1519–1574	M	55	Grand Duke	+	+	–
Eleonora of Toledo	1522–1562	F	40	Grand Duchess	+	–	–
Garcia	1547–1562	M	15	Prince	–	–	–
Giovanni	1543–1562	M	19	Cardinal	+	–	–
Francesco I	1541–1587	M	46	Grand Duke	+	–	+
Giovanna from Austria	1548–1578	F	30	Grand Duchess	+	–	+
Anna	1569–1584	F	15	Princess	–	–	–
Anonymous child (Med9)	?	?	6–12 months	?	–	–	–
Don Filippino Med40.39	1577–1582	M	15	Prince	+	+	–
Ferdinando I	1549–1609	M	60	Grand Duke	+	+	–
Cristina from Lorraine	1565–1636	F	71	Grand Duchess	+	–	+
Francesco	1594–1614	M	20	Prince	+	+	+
Carlo	1595–1666	M	71	Cardinal	+	–	+
Filippo (Med40.2)	1598–1602	M	4	Prince	+	–	+
Anton Francesco Maria	1618–1659	M	41	Illegitimate	–	+	+
Gian Francesco Maria	1619–1689	M	70	Illegitimate	–	+	?
Giangastone	1671–1737	M	66	Grand Duke	+	+	?
Anonymous child (Med40.34)	?	?	newborn	?	–	+	+
Anna (Med 40.22/42)	1552–1553	F	1	Princess	–	–	–
Anonymous child (Med40.29+31)	?	?	6–12 months	?	–	–	–
Lucrezia (Med40.40)	1572–1574	F	22 months	Princess	–	–	–
Anonymous child (Med40.45)	?	?	newborn	?	–	–	–
Anonymous child (Med40.48)	?	?	6–12 months	?	–	–	–
Total		13/25 (52%)	8/25 (32%)	8/25 (32%)			

in the second case it is unclear whether the craniotomies should be attributed to embalming, to autopsy, or to both procedures.

As for embalming, mummified human remains preserve clear traces of the body treatment, but in completely skeletonized remains it is impossible to differentiate between the cuts on bones made to perform an autopsy from those attributable to embalming; however, for particular categories of individuals, such as ruling dynasties, the archival documents in many cases attest to the practice of embalming after autopsies. The Aragonese kings and nobles buried in the church of S. Domenico Maggiore in Naples, whose corpses exhibited evidences of craniotomies and thoracotomies, represents suitable sample for the study of autoptic practices, performed mainly to embalm the bodies, during the Renaissance and the Early Modern Age (Fornaciari, 2006).

The exploration and osteoarchaeological study of the skeletal remains of members of the Medici family, buried under the vaults of the Basilica of San Lorenzo in Florence, offered the opportunity of investigating the practice of autopsy in these aristocratic personages. The Medici were one the most powerful families of the Italian Renaissance, who accumulated vast wealth through banking, commerce and skilful political ventures. Their bodies were opened soon after death and were treated before burial, as imposed by the political system, considering the importance of the social status of these personages. In this case, the osteoarchaeological study can be enhanced by the information provided by the extremely rich documentary archives of the family, which in some instances attests the autopsy performed by the court surgeons (Pieraccini, 1986).

2. Materials and methods

The Medici Project, a multidisciplinary study aimed at exploring the 49 burials of the Medici housed in the Basilica of San Lorenzo, was started in 2004. However, some burials had already been explored in the second half of the 19th century (Sommi Picenardi, 1888), and again after the Second World War (Genna, 1948). For these reasons, most of the human remains were not located in their original burial place, but were arranged in zinc coffins, not in anatomical position. All traces of the soft tissues have disappeared

and the bodies are at present skeletonized, although they were originally almost all artificial mummies. In fact, the anthropologists of the past, interested mainly in craniology and osteometric studies, removed all traces of soft tissues in order to better observe the skeletons. Only a hidden crypt hosting the remains of Giangastone, the last Medici Grand Duke (1671–1737), and of 8 children of the family, had never been explored, and therefore the burials were found intact. Unfortunately, the infantile bodies were damaged during the flooding of Florence in 1966, preventing the observation of further signs of embalming in some children of the family. Two other tombs, explored in 2013 during the restoration works of the Medici Chapels, revealed the intact burials of two minor and probably illegitimate members of the Medici family, but also in this case the soft tissues were not preserved.

A total of 25 out of 49 individuals, including the children found in the crypt of Giangastone, have been studied so far (Fornaciari et al., 2007). An osteoarchaeological study using macroscopic examination was performed in 14 adults, 10 males and 4 females, and in 11 subadults, aimed at detecting any signs of the autoptic practices of the court surgeons on the bodies of these aristocratic personages.

3. Results

Here we present the results of the examination of the skeletal remains of the members of the Medici family: 13 individuals out of 25 showed signs of autopsy and/or embalming. A summary of the examined skeletal remains and the results are reported in Table 1.

3.1. The family of Cosimo I

The father of Cosimo I, the famous military captain Giovanni delle Bande Nere (1498–1526), was buried under the floor of the Medici Chapels together with his wife Maria Salviati (1499–1543). The examination demonstrated that the skeletal remains of Giovanni and Maria did not evidence any traces of autoptic practices (Fornaciari et al., 2013, 2014). The documentary sources are silent about any autopsy or embalming performed on the corpse of Giovanni, while a reference to autopsy was found in a letter in which Cosimo's secretary Campana was asking the major-domo Pier-

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