

Articoli/Articles

THE MEDICI CHILDREN (FLORENCE, XVI-XVII  
CENTURIES): ANTHROPOLOGICAL STUDY AND  
PROPOSAL OF IDENTIFICATION

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SUMMARY

*Exploration of the Medici chapels in San Lorenzo in Florence revealed the burials of nine infantile members of the Medici family. Eight children were found in the intact tomb of the last Grand Duke Giangastone (1671-1737). The crypt contained several small coffins collapsed to the floor or randomly spread over a raised plank, as a result of the disastrous flood of the Arno river in 1966, which partly upset the tomb and left a layer of dry mould. The children's remains, mostly skeletonised, were found inside the coffins or scattered on the floor or on the plank, probably transported by the water. Another child was exhumed from the chapel of Grand Duke Ferdinand I (1549-1609) and Cristina from Lorena (1565-1636). The infantile remains were submitted to anthropological study, which allowed to establish the number of individuals buried in the crypt, and to estimate the age at death. The anthropological results were compared with information provided by archival documents, related to members of the family who died in infantile age. An identification of the children is proposed.*

**Key words:** Medici children – Florence – Renaissance - Identification

### *Introduction*

The Medici were one of the most powerful families of the Italian Renaissance. Starting from the 14th century, their careful management of banking ventures and skilful political actions brought them to the forefront of social and political power in Tuscany and in Florence, the intellectual center of the Western world. Lovers of art and science, the Medici were patrons of Michelangelo, Leonardo da Vinci, Botticelli, Galileo, and Benvenuto Cellini.

The members of the Medici family were buried under the floor of the crypt of the Basilica of San Lorenzo in Florence. During the “Progetto Medici”, started in 2004, the remains of the family members belonging to the branch of the Grand Dukes of Tuscany (beginning with John of the Black Bands (1498-1526) and ending with Giangastone (1671-1737)) were investigated from an anthropological and paleopathological point of view<sup>1</sup>.

Some burials had already been explored during the Second World War<sup>2</sup>, and for this reason we decided to begin our examination with the tomb of Giangastone, the last Medici Grand Duke (1671-1737), which was intact.

Removal of a marble disk in the floor of the chapel, initially considered a simple floor decoration, displayed a secret opening with a small stone stair leading to a hidden crypt. The small funerary crypt revealed a low raised plank supporting a large sarcophagus, lying opposite the stairs and containing the intact funerary deposition of the last Grand Duke. Other small coffins, collapsed to the floor or randomly distributed on the raised plank, were visible in the crypt and contained children’s bodies (fig.1). A layer of dry mould, remnant of the disastrous flood of the Arno river in 1966, covered the floor and the plank, encompassing the bones outside the coffins as well (figg.5-9).

A special on-site climate-control chamber was built over the entrance of the crypt, to face the problems of extreme dampness (90%)

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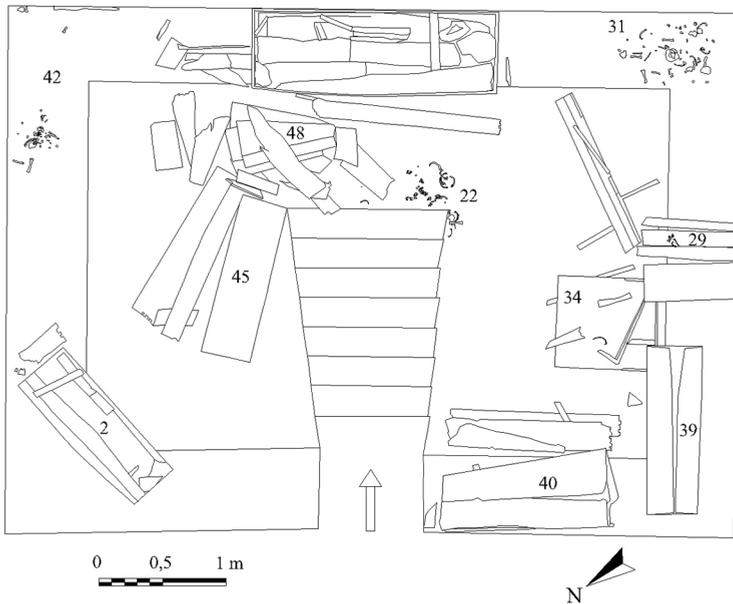


Fig. 1. Plant of the crypt of Giangastone, with the small coffins, collapsed to the floor or randomly distributed on the raised plank, containing the children's remains.

and high temperature (30 °C) and to avoid additional damage to the coffins and bodies by the introduction of external air during the archaeologists' examination (fig.2).

Another infantile member of the family was buried in a lateral chapel of the Medici chapel with Grand Duke Ferdinand I (1549-1609), his wife Cristina from Lorena (1565-1636) and their daughter princess Anna (1569-1584).

### *Materials and Methods*

Contrary to all expectations, several of the burials in the small wooden coffins, found in the Giangastone crypt, were fairly intact. The elaborate costume of a 5-year-old child, complete with shoes and silver crown, showed an excellent state of preservation. The red silk



Fig. 2. The special on-site climate-control chamber built over the entrance of the crypt to maintain the humidity and temperature inside.

jacket with thin collar and buttons was adorned with silver gallons and large plus-fours in the same flowery fabric (fig.3). Other burials such as the one of a baby of about 9 months, dressed in a precious silk vest with silver cuffs, was less well preserved.

The little coffins were not in their original position, but were distributed irregularly on the floor and on the plank of the crypt, as a result of the Arno flooding in 1966. The presence of water in the crypt also caused large bone movements, so that the remains of some individuals came out of the coffins and were scattered in different positions, in some cases giving rise to a mixture of bones. Furthermore, there was nothing either inside or outside the crypt which could help identify the children's remains.

As for the child buried in the lateral chapel, the skeletal remains were housed in a zinc box containing an epigraph reporting the name



Fig. 3. The well preserved costume of a 5-year-old child.

of Filippo (1598-1602), fourth son and sixth child of Ferdinando I (1549-1609) and Cristina from Lorena (1565-1636) (fig.4).

The bone remains of the Medici children were submitted to anthropological examination. The age at death was determined on the basis of the level of maturity of the teeth according to Ubelaker's evaluation tables<sup>3</sup>, formation stage of crowns, roots and apexes<sup>4</sup>, and average length of long bones after Stloukal and Hanáková<sup>5</sup>. Stature and age of the foetuses on the one hand and of the children on the other were determined applying respectively the method of Olivier and Pineau<sup>6</sup> and the curve of Stewart<sup>7</sup>.

Sex estimation for foetal and infantile individuals is a highly contested subject. Morphognostic analyses of infant mandibles performed by Loth e Henneberg<sup>8</sup> were successful in determining sex based on the shape of male and female mandibles. This method was applied to our samples, whenever possible.

The results of the anthropological study were compared with the information provided by archival and documentary sources on the members of the family who died in infantile age, in order to identify the skeletal remains found in the Giangastone crypt.

### *Results*

The anthropological study allowed to recompose the single skeletons and to attribute the bones scattered in the crypt. As a result, the children buried in the Giangastone crypt were 8, in addition to the child (MED 9) deposited in the lateral chapel of Ferdinando and Cristina.

### *MED40.2*

The skeletal remains were found inside the coffin on the plank of the northern corner of the crypt (fig.5). The coffin resulted to be broken at the bottom owing to the action of the water, which made some



Fig. 4. The epigraph found in the zinc box buried in a lateral chapel, which reports the name of Filippo (1598-1602), son of Ferdinando and Cristina.

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Fig. 5. The northern corner of the crypt with the coffin containing Med40.2.

of the bones fall on the floor, including a block of organic material, with which the thorax of the child was filled.

Chin morphology for this child allows to suggest the male sex. A discrepancy was observed between dental and skeletal age. Dental development revealed an age at death of 4 years  $\pm$  9 months, whereas length of the long bones was that of a 5-6 year-old child. In this case, the skeletal age is significantly older, while the dental data obtained using the Ubelaker method give us figures which are probably closer to real age.

### *MED40.22/42*

The unconnected bones of this child were located in two distinct areas of the crypt and therefore were initially assigned the two following identification numbers: 22, found on the floor at the foot of the entrance stairs, and 42, in correspondence to the eastern corner of

the plank (fig.6). Next to 42 there was also some material which has not yet been identified and which may have been put into the body during embalming<sup>9</sup>.

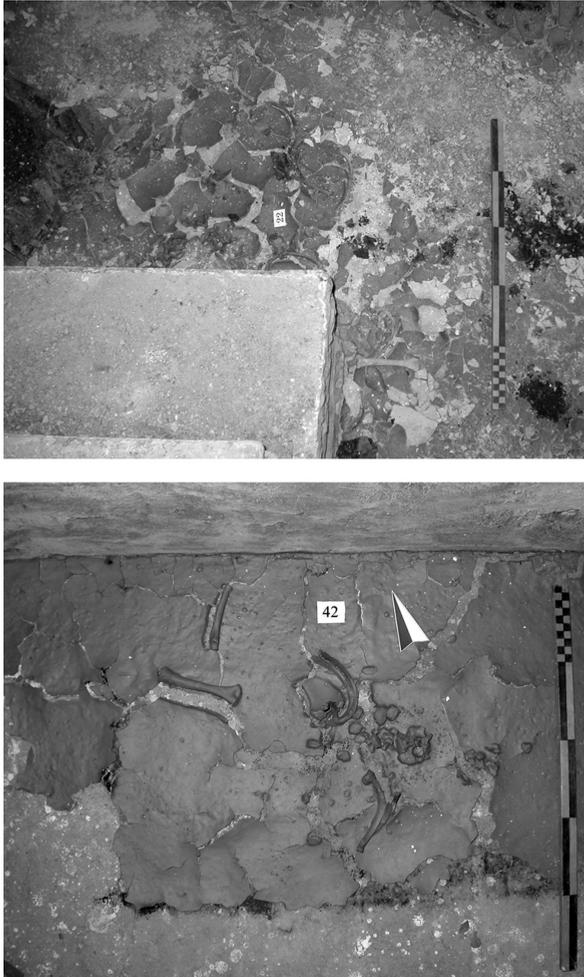


Fig. 6. The remains of Med40.22 found at the bottom of the stairs and of Med40.42 in correspondence of the eastern corner of the plank

When we compared the morphology of the right and left humeri, each one found in different groups of bones, we discovered that they were similar in terms of size and shape, which had made it possible for us to find a relationship between the two. We realised that the bones belonged to only one person and that the body had been seriously disturbed during the flooding of Florence in 1966.

Only one dental element was found with the few bones in Med 40.42. The germ of the first deciduous maxillary right molar, complete with crown but whose roots are not yet fully formed, suggest a dental age of 12 months  $\pm$  4 months; according to long bones measures, the skeletal age would seem to correspond to 12-18 months.

*MED40.29 + 31*

The remains of a child still wearing an apron (Med40.29) were found halfway along the right plank, when getting down the trapdoor. Only a part of the bones were collected, leaving *in situ* those inside the apron, in order to preserve the clothes. Other bones, scattered on the plank but in correspondence of the southern corner and named Med40.31, resulted compatible with those of Med40.29, which certainly belonged to the same individual (figg.7-8).

In this case, the dental age is slightly older than the skeletal age. This child demonstrated an age at death of 9 months  $\pm$  3 months, on the basis of dental development, and of 6 months, on the basis of diaphyseal length.

*MED40.34*

The child's bones were found in a small wood coffin which had fallen to pieces and was lying on the floor in the western part of the crypt, covered by the remains of cloth strips or an apron, probably in silk (fig.8). A little crown, probably of silver, was found near the head; embalming material, preserved at the level of the skull and the thoracic cage, documented the body treatment reserved to high social class personages of the period<sup>10</sup>.



Fig. 7. Bones (Med40.31) scattered on the plank in correspondence of the southern corner, associated with Med40.29.

According to the formula of Olivier and Pineau<sup>11</sup>, this is a newborn of about 296 days of life, corresponding to a little more than a couple of weeks of life with full-term pregnancy. The dental age confirms that it is a newborn.

*MED40.39 (“Child with red jacket”)*

The skeletal remains were contained in a wooden coffin lying on the plank in the western corner of the crypt (fig.8).

In this case the skeletal age, which revealed a 6/7-year-old child, is set slightly above that of the dental age that demonstrated an age at death of 5 years  $\pm$  16 months.

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The body shows signs of a skullcap, practised by the court surgeons to perform autopsy and probably embalming<sup>12</sup>. The surgeon opened the skull of the child with a very accurate, horizontal cut, using a bone saw by which he obtained an accurate horizontal craniotomy.

#### *MED40.40*

The child's remains were recovered under wooden boards that were found on the plank immediately to the west of the stairs (fig.8).

In this case skeletal and dental age are more or less the same: on the basis of the dental maturity levels this child was 24 months  $\pm$  8 months old, and on the basis of the length of their long bones the age at death corresponds to 18 months.

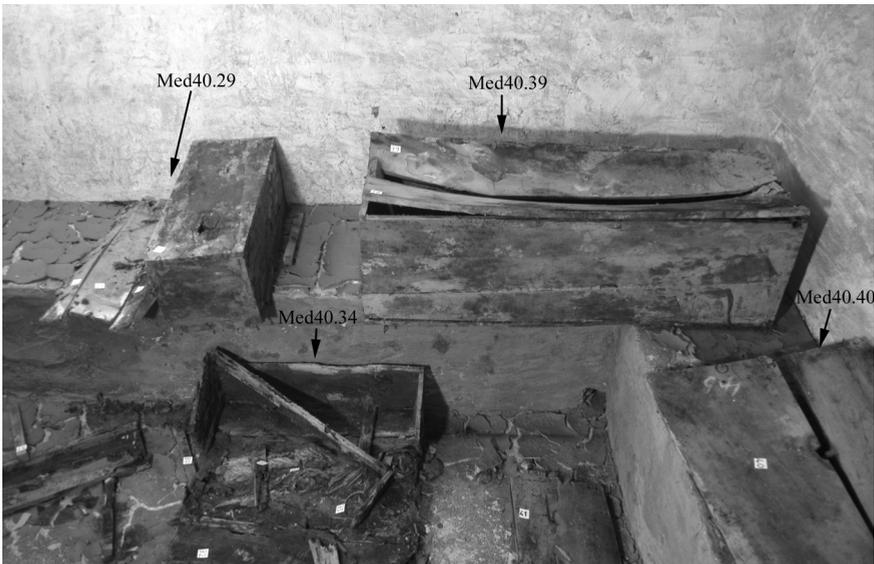


Fig. 8. The south-western area of the crypt, to the right of the stairs. Halfway along the right plank, going down the trapdoor there are the bones of Med40.29; on the floor, a small wooden coffin fallen to pieces preserved the remains of Med40.34; a wooden coffin lying on the plank in the western corner of the crypt contained Med40.39; finally, Med40.40 was found under the wooden boards on the plank immediately to the west of the stairs.



Fig. 9. Portion of the crypt in front and to the left of the stairs. The child remains of Med40.45 were found under wooden boards on the floor immediately to the west of the stairs; Med40.48 was found under the wooden boards lying on the floor at the foot of the entrance staircase.

#### *MED40.45*

The bone remains were found under and above wood boards moved by water on the floor immediately to the east of the stairs (fig.9).

According to the formula of Olivier e Pineau<sup>13</sup>, this is a newborn of about 280 days of life, that is 1 day of life with a full term pregnancy. The dental age also confirms that it is a newborn.

#### *MED40.48*

The child's bones were recovered under the wooden boards lying on the floor at the foot of the entrance stairs and belonging to a 16<sup>th</sup> century small coffin lined with reddish velvet that originally contained the body and that is only partly preserved (fig.9).

We found abnormalities in the levels of development of different teeth, which means that even when we use only one reference table to determine the age of death, the results can be different, depending on which particular teeth are analysed.

In particular, the permanent teeth demonstrate a level of maturity which would indicate a slightly older age than that suggested by the deciduous teeth. This obviously broadens the age range that can be attributed to the individual. As a result, a dental age of  $9 \pm 3$  months can be attributed to this child; according to long bone measurements, the skeletal age corresponds to 6-12 months.

#### *MED9*

According to an epigraph contained inside the box, the skeletal remains belonged to Filippo, son of Ferdinand and Cristina. However, contrary to all expectations, the anthropological study revealed that the bones belonged to an individual of a considerably inferior age at death. In fact dental age estimation revealed a child of  $12 \text{ months} \pm 4 \text{ months}$ , the diaphyseal age corresponding to the development of a 6-month infant.

#### *Discussion*

The lives of the members of the Medici family are well known from the extremely rich archives that were examined and published in the fundamental work of the Florentine physician and historian Gaetano Pieraccini<sup>14</sup>. This work contains many details related to these person-ages and to their clinical history, and also includes the reports of the ambassadors and court physicians. A comparison between the information derived from archival documents about children who died in infantile age and the data provided by anthropological analyses was performed. A possible identification is proposed here of the 8 children found in the crypt of Giangastone and of the child buried in the chapel of Ferdinando and Cristina.

*MED40.2*

This child, probably a male with dental age of 4 years, can be identified with Filippo, sixth child of Ferdinando I (1549-1609) and Cristina of Lorena (1565-1636), who, according to historical sources, was born on 9 April 1598 and died on 3<sup>rd</sup> April 1602, therefore at nearly four years of age<sup>15</sup>.

In the last days of March Filippo was in Florence at the Villa of Belvedere, where, he had an acute affection of the respiratory tract with fever; on 1<sup>st</sup> April 1602 his sister Caterina and his brother Lorenzo also fell ill. In the following days the high fever was accompanied by swelling of the abdomen, and on 3<sup>rd</sup> April Filippo died. The court physicians performed the autopsy and found a large quantity of purulent material in the thorax, lungs and abdomen, suggesting acute pleuro-peritonitis. The brief span of time comprised between onset of the illness and the death allows to rule out a diagnosis of lung pathologies such as tuberculosis, suggesting a diagnosis of bacterial pneumonia instead.

The only other Medici child who died at a similar age was Bia, born in 1537 and died on 1st March 1542, therefore at 5 years of age, after persistent fever. Bia was the first-born of Cosimo I (1519-1574), who had this daughter before becoming Grand Duke and marrying Eleonora of Toledo (1522-1562); Bia's mother remains unknown, but the child grew up very beloved at the court, spending most of her time with her grandmother Maria Salviati (1499-1543). However, the identification of Med 40.02 with Bia can be ruled out, taking into account the male features of the chin observed at anthropological study. Furthermore, in the archival documents there is no mention that Bia was buried in S. Lorenzo<sup>16</sup>.

*MED40.22/42*

This skeleton showed an anthropological age slightly older than 1 year. The only Medici child whose age could correspond to the

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skeleton is that of Anna, daughter of Cosimo I and Eleonora from Toledo, born on 10 March 1552 and died on 6 August 1553, at nearly 18 months of age. No other mention about Anna has been found in the archival documents, except for the information about delivery, which was regular and without any problems either for the mother or the child.

*MED40.29 + 31 ("Child with apron")*

In the Medici family two children aged between 6 months and 1 year are documented by literary sources.

Don Pietro or Pedricco, sixth child of Cosimo I and Eleonora of Toledo, was born in August 1546 and died on 9 June 1547, at 10 months of age; in March 1547 he experimented a slight fever with some pain, an indisposition that the court physicians attributed to teeth cut. These problems recurred at the beginning of June, date in which the child died suddenly and unexpectedly<sup>17</sup>.

Isabella, daughter of Francesco I (1541-1587) and Giovanna of Austria (1547-1578), was born on 30 September 1571 and died on 8 August 1572, at 11 months of age<sup>18</sup>. The information about Isabella is limited to the dates of birth and death; we also know that she was buried in San Lorenzo.

An identification of Med40.29 + 31 with Antonio, eighth child of Cosimo I and Eleonora of Toledo, born on 1 July 1548, cannot be ruled out<sup>19</sup>. Although the date of his death is unknown, it can be supposed that this child died shortly after birth, probably within the first year of age, if no other mention of this Medici prince is reported in the archives.

*MED40.34*

Archival documents attest the existence of two newborns in the Medici family, who died soon after birth. Romola, second child of Francesco I and Giovanna of Austria, was born on 20 November

1568 and died on 2 December, after only twelve days of life. She was buried in San Lorenzo<sup>20</sup>.

An unnamed daughter of Ferdinando II (1610-1670), fifth Granduke of Tuscany, and of Vittoria della Rovere (1622-1694), died on the same day of her birth, May 31, 1641<sup>21</sup>.

The anthropological age of Med40.34 calculated by the formula of Olivier and Pineau resulted in 16 days of life, which would better fit with the age of Romola rather than with that of the unnamed daughter of Ferdinando. Nevertheless, this identification is only hypothetical, because diagnosis of age in a skeleton cannot be determined so precisely, but is always represented in a range.

*MED40.39 (“Child with a red jacket”)*

Skullcap and anthropological age certainly suggest identification of this child with Filippo, seventh child and only son of Francesco I and Giovanna of Austria, born on 20 May 1577 and died on 29 March 1582. As far as Filippo is concerned, dental age calculated using the Ubelaker method coincides with what would be the real age of the individual and thus proved to be more reliable than the skeletal values.

Historical accounts tell us that the young prince underwent autopsy and that the skullcap was cut and removed. Furthermore, a number of details concerning the prince’s clothes help with identification. Archival documents refer that he was buried in “*a red velvet gown that reached down to his feet*”<sup>22</sup>. The “*gown...to his feet*” probably refers to a cloak which got destroyed. The child Med40.39 was in fact still wearing elaborate clothes, with shoes and silver crown, found in excellent state of preservation (fig.3). The red silk jacket with thin collar and buttons was adorned with silver gallons and large plus-fours in the same flowery fabric. The costume is very similar to the one worn by Don Filippino as portrayed by Bizzelli (1586), where he appears with his mother Giovanna of Austria.

Unlike other Medici children, whose life details remain unknown, archival documents provide different types of information about Filippo. After delivery he was immediately baptized at night because, owing to his troublesome birth, there was fear for the life of the newborn. Indeed, his delivery was long and difficult, as a result of his mother's pelvis dystocia. Filippo was a weak and sickly child, who frequently suffered from cough, catarrh and fever episodes. Psychic development must have been normal, because he was already signing his letters at 5 years of age. His clinical history includes bronchitis with fever in May 1578, "nerve attacks" and convulsions in 1580, "tertian" (intermittent) fever, epilepsy, "convulsions" and coma on 13 March 1582, until he died some days later. The archival documents contain the autopsy report of Filippo, which provides an accurate description of a typical hydrocephalus. The physicians and surgeons who had cured him cut his head and underneath the first membrane of the brain they found "the equivalent of almost a glass of water, so that they all thought that this had been the real cause of his death"<sup>23</sup>.

A portrait of don Filippino, painted in the same year of death (1582), shows the picture of a non-severe hydrocephaly, with low implant of the orbits and auricles and evident expansion of the cranial vault.

*MED40.40*

This child could be identified with Lucrezia, daughter of Francesco I and Giovanna d'Austria, born on 7 November 1572 and died on 14 August 1574 at the age of 22 months<sup>24</sup>. No other mention about this Medici child is referred by archival documents.

*MED40.45*

The age at death is similar to Med 40.34, therefore two identifications are possible: the body could be that of Romola, daughter of Francesco I and Giovanna of Austria, who died after only twelve

days of life or that of the unnamed daughter of Ferdinando II and Vittoria della Rovere, who died on the same day of her birth.

The anthropological age of Med40.48 calculated with the formula of Olivier and Pineau resulted in 1 day of life, which would better fit with the age of the unnamed daughter of Ferdinando rather than that of Romola. However, the same considerations made for Med 40.34 are valid and this identification remains a conjecture.

#### *MED40.48*

This child shows the same age as Med 40.29+31, and could therefore be identified with Don Pedricco, son of Cosimo I and Eleonora of Toledo, who died at 10 months of age, or with Isabella, daughter of Francesco I and Giovanna d'Austria, who died at 11 months of age, or with Don Antonio, son of Cosimo I and Eleonora of Toledo.

#### *MED9*

This child revealed an anthropological age very similar to that of Med 40.29+31 and Med40.48, therefore the same possibilities of identification are suggested.

#### *Conclusions*

The anthropological study, carried out on the younger members of the Medici family, revealed that the children buried in the crypt of Giangastone at the Medici Chapels of the Basilica of S. Lorenzo in Florence were 8. Another child was exhumed from the lateral chapel of Ferdinando and Cristina.

Age at death using different methods based on level of dental maturity and length of long bones was determined; in some cases a sex estimation was also possible, observing morphological features of the mandible. By matching these results with the information provided by archival sources, an identification with the infantile member of the Medici family is suggested, as summarised in table 1:

*The Medici children*

Child	Dental age	Diaphyseal age	Proposed identification	Age at death
40.2	4 years $\pm$ 9 months	5-6 years	Don Filippo (9/4/1598-3/4/1602)	4 years
40. 22/42	12 months $\pm$ 4 months	12-18 months	Anna (10/3/1552 – 6/8/1553)	18 months
40.29+31	9 months $\pm$ 3 months	6 months	Don Pedricco (August 1546 – 9/6/1547) or Isabella (30/9/1571 – 8/8/1572) or Don Antonio (1/7/1548 - ?)	10 months 11 months ?
n.40.34	Newborn $\pm$ 2 months	296,52 days	Romola (20/11/1568 – 2/12/1568) or Unnamed of Ferdinando II (31/5/1641)	12 days unknown
40.39	5 years $\pm$ 16 months	6-7 years	Don Filippino (20/5/1577 – 29/3/1582)	5 years
40.40	24 months $\pm$ 8 months	18 months	Lucrezia (7/11/1572 – 14/8/1574)	22 months
40.45	Newborn $\pm$ 2 months	Newborn (280,91 days)	Romola (20/11/1568 – 2/12/1568) or unnamed of Ferdinando II (31/5/1641)	unknown 12 days
40.48	9 $\pm$ 3 months	6-12 months	Don Pedricco (August 1546 – 9/6/1547) or Isabella (30/9/1571 – 8/8/1572) or Don Antonio (1/7/1548 - ?)	10 months 11 months ?
9	12 months $\pm$ 4 months	6 months	Don Pedricco (August 1546 – 9/6/1547) or Isabella (30/9/1571 – 8/8/1572) or Don Antonio (1/7/1548 - ?)	10 months 11 months ?

Tab. 1 Age estimation of the 9 children exhumed from the Medici chapel in San Lorenzo and proposed identification with infantile members of the Medici family

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