HISTORY

Extraction of a bladder stone in a child as described by the renaissance physician Cristóbal Méndez∗

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Abstract

Introduction: in his Libro del exercicio y de sus provechos (Book of exercise and profits), the Spanish Renaissance physician Christopher Mendez (1500–1553) describes extracting a bulk stone from the bladder of a child younger than 5 years in the land of colonial Mexico. This is the first description of a surgical procedure in America.

Materials and methods: Biographical data were collected on Christopher Mendez. The electronic facsimile of the Book of exercise and profits was read. The historical aspects of perineal lithotomy and etiology of bladder stones were analyzed.

Results: In chapter seven of the third treatise (page 120), Mendez speaks about the removal of a bladder stone in a boy named “Villaseñor”. It uses the word “open” to describe the procedure, corresponding to a lithotomy more than a necropsy. It attributes the etiology of excess movements after ingestion and suggests a possible hereditary etiology.

Discussion: Perineal lithotomy was a common practice in ancient times for children due to the high incidence of bladder stones. The technique was very invasive and was improved over the centuries.

Conclusions: The surgery described by Mendez for the child called Villaseñor most likely corresponds to a perineal lithotomy. A congenital cause could play a role in its etiology.

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PALABRAS CLAVE
Litotomía;
Litiásis vesical;
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Historia de la urología

Extracción de un cálculo vesical a un niño según el relato del médico renacentista Cristóbal Méndez

Resumen

Introducción: El médico renacentista español Cristóbal Méndez (1500–1553) relata en su obra Libro del exercicio y de sus provechos la extracción de un grueso cálculo de la vejiga de un niño.

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Extraction of a bladder stone in a child as described by the renaissance physician Cristóbal Méndez

**Introduction**

The Renaissance physician Cristóbal Méndez (1500?–1553) was born in Jaén, studied in Salamanca and was resident of Seville. In 1529, he traveled as a physician to Mexico, where he witnessed the removal of a thick stone from the bladder of a boy surnamed Villaseñor, as recounted in his work *Libro del ejercicio y de sus provechos* (Fig. 1), published in 1553.

Lithotomy was one of the most practiced interventions during antiquity. The first description of perineal lithotomy corresponds to Aulus Cornelius Celsus (25 BC–50 AD). The technique was performed regularly perineally well into the nineteenth century with little evolution over the centuries: first *apparatus minor*, then *apparatus major*, and more myophilastic incisions and with more sophisticated instruments. In children, bladder lithiasis was endemic due to an imperfect diet, those being the ones undergoing the intervention routinely.

Our goal is to argue about the surgical nature and not autopsic of the incident reported by Cristóbal Méndez and review the ethiopathogenesis of bladder stones in the Renaissance.

**Materials and methods**


**Results**

In the third treatise of the *Libro del ejercicio y de sus provechos* (1553), we can find the ‘Chapter Seven of the exercise: which in every age is required to maintain health. And it says here of childhood and boyhood’, where (page 120) Cristóbal Méndez recounts his own experience to witness the removal of a stone to a child about 4–5 years old, the son of a so-called Villaseñor. It reads:

‘And because sometimes if after eating, they do too much movement: they usually have this unfortunate disease: which is bladder stone […] although they can have the disease from the womb of their mother. I saw in Mexico a child son of a very honest man called Villaseñor being opened: and he was not five years old: and a stone nearly as big as an egg was taken out: and no doubt according to its quantity: which was done before being born. So the very big move after eating […] increases the heat: they sweat a lot […] attract the indigestible delicacy from the stomach: and the same heat gets weak: and there are many superfluities: and through the urinary tract they go to the bladder: and since they are sticky they stay there: and with once a little; and then more […] and the same natural heat that is unstable there consumes the subtle and hardens the thick part; and it becomes a stone: and thus it increases until it becomes big: and it cannot leave and it goes to the bottom of the bladder […] until it comes to kill the man, or to kill him by opening him: or remain healthy as it happens to many’.

**Discussion**

Doctor Cristóbal Méndez lived the time when Spain enjoyed great territorial domain under the reigns of Charles I and Philip II, in contrast to a growing resistance to openness cultural movements (reform) that took place in Europe, led by Erasmus of Rotterdam (1466–1536). Counter-reformist politics started excluding Spanish intellectuals from European scientific currents from the sixteenth century, often leading physicians to face the Inquisition. Méndez himself had warnings of the Holy Office. The Spanish medicine of his time had collected Islamic influences (Razhes, Averroes) assimilating it to classicism (Aristotle, Galen) prevailing in the Middle Ages, evolving into the Renaissance Humanism.

The *Libro del ejercicio y de sus provechos* provides a detailed overview of the benefits of physical activity and is considered the first treatise on kinetotherapy or
sports medicine.\textsuperscript{1} Framed in classicism (humoral medicine, Aristotelian anatomical model) when the counter-reform was still incipient, it shows progressive displays: plea for care of the vital functions and rediscovery of the human body, framed in Renaissance humanism,\textsuperscript{13} in line with secularization when interpreting the body morphology and its functions (Servet, Vesalius, Harvey).\textsuperscript{14} There are 4 remaining copies of the original book by Méndez: National Library of Spain (2 copies), Library of Castilla - La Mancha in Toledo,\textsuperscript{15} and one at Yale - the best preserved.\textsuperscript{1,13} The National Academy of Medicine of Mexico (1991)\textsuperscript{16} and the Community of Madrid (1998)\textsuperscript{17} printed facsimiles. Guerra made an English translation in 1960, adding some comments.\textsuperscript{18}

Cristóbal Méndez traveled to Mexico as court physician and lived there for 12 years. He served the nobility, including the wife of Hernán Cortés (1485–1547) – who he was a friend of – and the Viceroy Antonio de Mendoza (c. 1490–1552). The Book, written on his return to Andalusia, includes many autobiographical notes, including witnessing the removal of the bladder stone to the child Villaseñor around 1529. There is general agreement that Méndez observed the intervention but did not perform it. Considered the first surgical registry of America,\textsuperscript{2} there is controversy over whether it was a live lithotomy or a necropsy due to the use of the word 'cut' to describe the technique and the lack of technical details in the narration. The supporters that it was a surgical intervention, cited by Quijano,\textsuperscript{2} are the historians of medicine Antonio Hernández Morejón (1773–1836) and Francisco Fernández del Castillo (1899–1983), while those who think it was necropsy are Germán Somolinos d’ Ardois (1911–1973) and Francisco Guerra (1916–2011).

We must start from the basis that any view on this is imaginary due to the lack of data of the Book. Guerra in its version translated into English in 1960 (page 65, footnote 17) says: ‘The autopsy was certainly the earliest made in the western hemisphere’, without offering any argument that supports this claim, and it includes directly in the index the entries Autopsy on child and Autopsy, child in México.\textsuperscript{19} For his part, Somolinos takes a conceptual approach to the subject on page 261 of his monograph, but without objective data.\textsuperscript{19} The chronologically closest interpretation to the book by Méndez is that of Hernández Morejón. In his Biblioteca escogida de medicina y cirugía (Volume III, page 14) 1843\textsuperscript{20} he discusses the findings of the book by Méndez: ‘Carving operation conducted in Mexico to the author, and extraction of a stone the size of an

\begin{figure}
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\caption{Original cover of the book by Cristóbal Méndez. Taken from: \url{http://www.ujaen.es/investiga/hum669/Mendez_exercicio.htm}.}
\end{figure}
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Figure 2 Dilator-clamps for perineal lithotomy.

egg’. He conjectures that it was surgery, without providing further explanations, although the temporal proximity and the ‘normality’ of the bladder size that persisted in the early nineteenth century support this interpretation. Meanwhile, Fernández del Castillo in his book La Cirugía mexicana en los siglos xvi y xvii (page 7), published in 1936, refers to Morejón but without consulting the book by Méndez in the absence of specimens in his environment. He regrets it and says: ‘it would have been interesting to investigate whether he brings the data about those who performed the operation, where it was made, and with what results’. Viveros, in his Hipocratism en México, empirically attributed the practice of autopsies in the New World to Méndez, which cannot be extrapolated to the observation of the child Villaseñor.

We think that the literal text of Méndez is more suited to a live lithotomy than to an autopsy, since the author uses the term ‘open’ not only to describe the maneuver, but later, when referring again to the risks of lithotomy he says: ‘killing by opening’, leaving implicit that death is a risk of opening the living, logically with surgery. Julián Gutiérrez de Toledo (second half of the fifteenth century – 1529) in his book Cura de la piedra y dolor de la yjada y cólica renal he uses ‘open’ to describe a lithotomy ‘when the stone is big there is no choice but to open and remove it’. So does Francisco Díaz (1527–1590) on page 210 of his book ‘Newly printed treatise of all the diseases of the kidneys, bladder, and proud flesh of the penis, and urine’ of 1588, when he explains the lithotomy to Bachelor Salamanca: ‘all doctors tried with great instance to open with relatives […] and then it opened, and we found between the two membranes of the bladder, at the top, a stone over seven ounces […] that horrified everyone’. A few pages later Díaz tells other cases of lithotomy and refers to the good prognosis of the intervention in children: ‘in my presence many of these works have been performed: and they were healed and very well’. However, the word ‘open’ is also used by the author to refer to anatomical studies on cadavers.

In the sixteenth century, 2 significant technical advances occur in the lithotomy: Giovanni da Romanis advocates the urethral tutor to lead the cut, and his disciple
Marianus Sanctus Barolitanaus (1488–1565) describes a more lateral incision with more sophisticated instruments, being called *apparatus major*, *sectio mariana* or ‘the Italian way’, indicated in adults. In 1595 *Les Oeuvres de M. Ambroise Paré*, *Conseiller et Premier Chirvrgien dv Roy* was published in Paris, which included new instruments, being one of the most popular texts on lithotomy (Fig. 2). Francis Rosset of Montpellier in 1590 and Pierre Franco (1505–1578) in 1556 advocated unsuccessfully for the hypogastric route (*Apparatus Altus*), which John Douglas finally imposed in 1719.24

In New Spain a surgical practice was established according to the criteria prevailing in the Peninsula. The Protomedicato (regulatory official body of medical practice established by the Catholic Monarchs), which Méndez himself joined in México, gives an idea of the high organization that the medical and surgical practice was under in the dependent territories of the Spanish Crown, which supports the presence of Hispanic medical personnel overseas. Coinciding with the introduction of stone and with the epidemic of 1545, the Royal University of Mexico was founded in 1551 which; however, did not open any chair of medicine but could grant and revalidate degrees to surgeons and practitioners coming from Spain.25 This situation led to the dissemination of indigenous books on surgery. In 1578 the first medicine treatise printed in America appeared: *Svmma, y Recopilacion de Chirurgia, con Vn Arte para Sangrar muy Vtil y provechosa Compuesta por Alonso López*, extended in 1595 by the author. In 1579 *Tractado breve de anotomia y chirurgia y de algunas enfermedades que más suele haver en esta Nueva España* was published, by the Augustinian Agustín Farfán, already trained in America. A college of physicians and surgeons was thus formed who served as a basis for the subsequent consolidation of novohispana academic medicine in an environment organized by the associations-guilds who attended the local medical needs in combination with the native medicine.

The perineal lithotomy was a very common operation from classicism to the nineteenth century.26 It was performed perineally with the technique known as *apparatus minor o sectio celsiana*, which required only a sharp knife and some clamps.20,11 The surgeon introduced his fingers into the rectum of the patient, fixed the stone at the bottom of the bladder and practiced a cut in the middle of the perineum (Fig. 3), up to reaching the bladder and removing the stone. The complications, sequelae, and mortality of the lithotomy were very high. There were no anesthetic or hemostatic means. As a solution, Celso offers the horrifying possibility of immersing the patient in vinegar. François Tolet (1647–1724), in his treatise on lithotomy of 1682, says: ‘It would be better to have fewer viewers, because the presence of many people can greatly disturb the operator, frighten the patient, and compromise erroneous construction on accidents that sometimes accompany the operation. It is both suitable and convenient that a priest is present to talk to the patient from time to time, as it can help distract his pain and increase his patience during the operation’.21 The intervention was performed when the patient was on the verge of despair due to his illness, as recounted by Luis Montero in his *Observacion de operacion Lithotomicana... 1748*. These are superimposable statements to those that must have occurred at the time of Méndez due to the relative stagnation of lithotomy in the fifteenth to eighteenth centuries.

Cristóbal Méndez exposes 2 possible etiologies for childhood bladder stones, one associated to excess postprandial mobility (‘they attract the indigestible delicacy from the stomach [...] and through the urinary tract they go to the bladder’) and another one prenatal (‘a stone [...] that was formed before being born’). Although he erroneously attributes it to excessive movements, he is right when he associates lithiasis to digestion, as in ancient times diet was based on cereals (theory of the only cereal), promoting the childhood bladder stones, an issue that has been proven in studies of Asian populations of low income in the early twentieth century with similar nutritional pattern to the European one several centuries ago.10,11,32 To Méndez stone formation is a result of the exit of successive digestions through the urine. Although due to a different pathogenesis, diet continues to play a key role in the current lithogenesis. Méndez makes another interesting point when he emphasizes that the stone could be formed in the child ‘before being born’, assessing with great clinical smell the precocity of the case (under 5 years of age), which opens the possibility of inherited disorders such as cystinuria and hyperoxaluria. Elsewhere in the book he states that gout and calculus are courteous diseases derived from idleness, recommending ‘playing ball games, shooting games, and riding’.

Conclusions

The story of the removal of a bladder stone to a boy named ‘Villasenhor’ (1529) in the work *Libro del exercicio y de sus provechos* (1553) by Cristóbal Méndez (1500–1553) probably corresponds to a perineal lithotomy. Arguments for:
high incidence of childhood bladder stones in the old times and usual practice of perineal lithotomy in the sixteenth century. The main coetaneous hispanic texts (Renaissance) on lithotomy use the term 'open' to define the lithotomy. Historian Hernández Morejón (1773–1836) points to it at a time when the operation was still practiced.

Conflict of interest

The authors declare that they have no conflict of interest.

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