

# Journal of the Royal Society of Medicine

<http://jrs.sagepub.com/>

---

**Bartolomé Hidalgo de Agüero's 16th century, evidence-based challenge to the orthodox management of wounds**

Carlos Solís

*J R Soc Med* 2012 105: 401

DOI: 10.1258/jrsm.2012.12k062

The online version of this article can be found at:

<http://jrs.sagepub.com/content/105/9/401>

---

Published by:



<http://www.sagepublications.com>

On behalf of:



[The Royal Society of Medicine](http://www.sagepublications.com)

Additional services and information for *Journal of the Royal Society of Medicine* can be found at:

**Email Alerts:** <http://jrs.sagepub.com/cgi/alerts>

**Subscriptions:** <http://jrs.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [Version of Record](#) - Sep 1, 2012

[What is This?](#)



# Bartolomé Hidalgo de Agüero's 16th century, evidence-based challenge to the orthodox management of wounds

Carlos Solís

Departamento de Lógica, Historia y Filosofía de la ciencia, Universidad Nacional de Educación a Distancia (UNED), Madrid, Spain

Email: csolis@fsf.uned.es

**DECLARATION**

Before the 15th century, the Galenic tradition in the treatment of wounds promoted an approach called healing by 'second intention', which involved encouraging the development of 'laudable pus'. Laudable pus was pus with a creamy consistency which, by comparison with thin, smelly pus, was believed to reflect a 'worthy' response by the body to infection. Surgeons promoted this approach to treatment by forcing wounds open with instruments such as trephines or scrapers, applying emollient compounds, and encouraging drainage. The expectation was that wounds would heal only gradually under this regimen; however, patients subjected to it not infrequently died.

**Competing Interests**

None declared

**Funding**

None

**Ethical Approval**

Not required

**Guarantor**

CS

**Contributorship**

CS is the sole contributor

**Acknowledgements**

The author and editors thank David Teira Serrano for promoting and editing this article, and for his translation of Hidalgo de Agero's text. Additional material for this article is available from the James Lind Library website ([www.jameslindlibrary.org](http://www.jameslindlibrary.org)) where it was first published

By the end of the 15th century some European surgeons were beginning to experiment with alternative methods. For example, partly by observation of 'natural' experiments and partly as a result of formal experimentation, Ambroise Paré modified his treatment of gunshot wounds and burns.<sup>1,2</sup> A Spanish contemporary of Paré – Bartolomé Hidalgo de Agüero<sup>3</sup> – also challenged the traditional, 'wet healing' approach to the management of wounds. He developed, described and evaluated 'dry healing' of wounds, 'by first intention'.<sup>4</sup> His method involved cleaning the wound with white wine, bringing the wound edges together, removing any damaged tissue, applying astringent or drying compounds, and then covering the wound with a bandage.

Bartolomé Hidalgo de Agüero was born in Seville, and lived and died there.<sup>5</sup> He studied medicine and surgery at the Hospital del Cardenal de Sevilla, where his teachers were Alfonso Cuadra and Juan de la Cueva (whom he later replaced as the hospital's senior surgeon). The hospital had been established in 1455, and was

already renowned for the treatment of wounds. The standard approach, taught to Hidalgo by Juan de la Cueva, was the Galenic 'wet healing' method. After a while, however, Hidalgo observed that, out of every 30 patients treated, 24 or more died.<sup>6</sup> These observations prompted him to notice a passage in Galen's *Ad Glauconem de medendi methodo*, where the Roman 'wet healing' approach had been compared to the 'dry approach' implemented by physicians 'in Asia'.<sup>3,7</sup>

Following up on this clue, probably over the years 1580 to 1583, Hidalgo developed a 'dry treatment' technique for managing wounds, and evaluated his results with a quantitative comparison with results following the wet method. Using information in the hospital's registers, he compared mortality among patients whose wounds had been treated with 'the wet method' with mortality among patients whom he had treated before 1583 with 'the dry method'. Unfortunately, the hospital registers from this period have been lost (indeed, there are no reliable data from this source until 1622). However, the data are likely to have been adequate for Hidalgo's comparison of treatment outcomes. Hospital rules required the chaplain to record details about every patient, stating the dates of admission and discharge, together with place of birth, family relationships, and a detailed description of the patient's clothes and any money he might have on admission to hospital; and if the patient died, the date and causes of death.<sup>8</sup>

According to Hidalgo, the mortality rate of patients treated with 'the dry method' was around 3%, compared with over 50% with 'the wet method'.<sup>3,8</sup> Out of the 456 wounded patients admitted to the hospital in 1583, only 20 died (and of 57 patients admitted with head wounds

over a two month period, only 7 died). He is less clear about outcomes following use of 'the wet method', simply noting that, in previous years, more patients had died than survived. Had the mortality associated with his 'dry method' applied during those years, only 5% of patients admitted would have died (and around 12% of those with head wounds). A book about famous men published in 1599 by Francisco Pacheco (the painter who taught Velázquez) mentions that only three of 110 patients with head injuries admitted in 1596 died after use of Hidalgo's 'dry method'.<sup>9</sup> Chinchilla mentions<sup>6</sup> that Hidalgo de Agüero's patients healed after 10 to 14 days, while it took months for those treated with the wet method – if indeed they ever healed.

Hidalgo de Agüero's account of the development and evaluation of his approach to treating wounds was published posthumously, thanks to his son-in-law, Francisco Ximénez Guillén. It was approved by the Spanish Inquisition's ecclesiastical censors on 25 March 1596, and published in 1604. The book was reprinted in Barcelona by Sebastián Comellas in 1624, and in Valencia by Claudio Macé in 1654. Younger surgeons trained by Hidalgo de Agüero, such as Pedro López de León, promulgated Hidalgo's methods in Spain and Latin America.

More than forty years after Hidalgo had introduced his 'dry method', it was still in use at the Hospital del Cardenal de Sevilla; but it had not by any means been adopted as the standard approach. In 1636, Agustín de la Fuente, who had by then been the chief surgeon for seven years, mentions in a petition to the hospital's governing board that 190 patients died every year after treatment with the 'wet method', when during the first eight months of 1636, when the 'dry method' had been used, there had been only 32 deaths, half of which happened before admission and could not have been caused

by the new treatment. Given that the number of patients admitted every year before 1630 was around 1000, the hospital's death rate for wounded patients would have decreased from 19% to around 5% – and even lower if we assume that half of those admitted were already dead.<sup>8</sup>

Finally, an interesting tribute to Hidalgo de Agüero's skill as a surgeon is that a prayer used in the Sevillian underworld before a knife fight was '*En Dios me encomiendo, y en manos de Agüero*' [In God I trust, and in Agüero's hands]!

## References

- 1 Paré A. Les oeuvres de M. Ambroise Paré conseiller, et premier chirurgien du Roy avec les figures & portraits tant de l'Anatomie que des instruments de Chirurgie, & de plusieurs Monstres..... [The works of M. Ambroise Paré, advisor, and first surgeon to the King, with figures and portraits concerning anatomy as well as surgical instruments, and several monsters] Paris: Gabriel Buon, 1575
- 2 Donaldson IML. Ambroise Paré's account in the Oeuvres of 1575 of new methods of treating gunshot wounds and burns. JLL Bulletin: Commentaries on the history of treatment evaluation ([www.jameslindlibrary.org](http://www.jameslindlibrary.org)) 2004
- 3 Hidalgo de Agüero B. *Thesoro de la verdadera cirugia y via particular contra la común*. Sevilla: Francisco Pérez, 1604:67v–68
- 4 Granjel I. Bartolomé Hidalgo de Agüero. Paper presented at the XV Congreso Internacional de Historia de la Medicina (Madrid-Alcalá) 1956
- 5 Castaño Almendral A. La obra quirúrgica de Bartolomé Hidalgo de Agüero. Salamanca: Seminario de Historia de la Medicina, Serie A, Estudios, t. 2, n° 6 1959
- 6 Chinchilla A. *Bartolomé Hidalgo de Agüero. Anales Históricos de la Medicina en General y biográficobibliográfico de la española en particular*. Valencia: Imprenta de Don José Mateu Cervera, 1845 Vol II, p. 28–39. (The figure is on p 29)
- 7 Kühn KG, ed. *Claudii Galeni opera omnia*. Vol. X, Leipzig: Car. Cnoblochii, 1825:454–455
- 8 Herrera Dávila J. *El Hospital del Cardenal de Sevilla y el Doctor Hidalgo de Agüero*. Sevilla: Ediciones de la Fundación de Cultura Andaluza, 2010:94, n 226
- 9 Piñero Ramírez PM, Reyes Cano R, eds. *Libro de descripción de verdaderos retratos de ilustres y memorables varones*. Sevilla: Publicaciones de la Diputación Provincial, 1985:153