



Saving Prince Hal: maxillo-facial surgery, 1403

Jo Cummins*



Fig 1 Henry V: The Royal Collection

In the summer of 1403, the influential Percy family of Northumberland revolted against King Henry IV of England. The Percys assembled a feudal army and marched south into Cheshire where they recruited other malcontents to their cause. These included a notable body of English and Welsh archers. The rebels drove on to Shrewsbury in Shropshire where they were confronted by the king's forces. The Percy bowmen opened with a massive barrage. A chronicler recorded that the arrows flew:

"... so fast and thick that it seemed to the beholders like a thick cloud, for the sun, which at that time was bright and clear then lost its brightness so thick were the arrows..." (1)

The following battle was one of the bloodiest fought on English soil during the Middle Ages. Both sides probably lost around 1600 men in the field, with another 3000 wounded. One of those injured was the King's sixteen-year-old son, Shakespeare's Prince Hal, later Henry V the victor of Agincourt. During the battle, the young prince appears to have lifted his visor perhaps to give an order or for ventilation and was wounded in the face by an arrow. The arrowhead entered the boy's flesh at an angle, penetrating to the left of his nose just below the eye. The shaft was extracted but the point remained lodged "in the furthest part of the bone of the skull to the depth of six inches". (2) Although he had received a painful and potentially fatal injury, the young prince refused to leave the field until it was clear that his father's forces had prevailed. Thereafter he submitted to the royal surgeons and retired to Kenilworth Castle for treatment. (3)

Extracting an arrowhead was well known to be a hazardous procedure as Chaucer remarks in *The Franklin's Tale*:

"And well ye know that of a sursanure [a superficially healed wound]

In surgery is perilous the cure

But men might touch the arwe or come thereby."

Various medieval surgical manuals gave instructions regarding the tricky and potentially lucrative business of removing bolts and arrows. One of the best regarded of these was the *Chirurgia* of Robert of Salerno, a continental work written in 1180 but well known in England and still popular in 1403. Surgery could involve extraction, excision or propulsion whereby the embedded arrow was forced through the flesh thus creating an exit wound. For superficial penetration, a drawing potion or poultice was the first line of treatment to make the iron head easier to manipulate; thereafter Robert of Salerno recommended molten lard to

draw and seal the wound. Alternatively, where the arrow tip lay deep in the bone, he noted that it was often best to leave it in situ. It is possible that this was the course taken in the case of the unfortunate King David II of Scotland, who was struck in the face by two arrows at the battle of Neville's Cross in 1346. One of the tips was extracted but the other defied the attempts of his surgeons to dislodge it. David continued to suffer until sometime between 1365 and 1370 when the pain miraculously ceased. His relief coincided with a visit to the shrine of St Monan in Fife. The King rebuilt the church there as a thank offering.

Another author, Heinrich von Pfolspeunt (15th century) preferred sawing off the shaft a few centimetres above the wound and doing nothing more for 8 to 14 days until "the wound becomes full of pus". The arrowhead could then be lifted out without much trouble. The site was subsequently scalded with boiling oil and a branding iron used for haemostasis. (4)

After Prince Hal was conveyed to Kenilworth Castle his doctors followed the advice of these manuals in trying to remove the arrowhead by "potions and other methods" but failed.(5) They sent for John Bradmore, a London surgeon who had already served the Royal household. Bradmore left an account of his treatment of Prince Henry's injury in his own surgical treatise entitled *Philomena [The Nightingale]*, written sometime between 1403 and his death in 1412. He describes the case thus:

"And it should be known that in the year of Our Lord 1403, the fourth year of the reign of the most illustrious King Henry, the fourth after the Conquest, on the vigil of St Mary Magdalene, it happened that the son and heir of the aforesaid illustrious king, the prince of Wales and Duke of Aquitaine and Lancaster, was struck by an arrow next to his nose on the left side during the battle of Shrewsbury. The which arrow entered at an angle (ex traverso), and after the arrow shaft was extracted, the head of the aforesaid arrow remained in the furthest part of the bone of the skull for the depth of six inches. The aforesaid noble prince was cured by me, the compiler of this present Philomena gratie [The Nightingale of Grace], at the castle of Kenilworth - I give enormous thanks to God - in the following manner. Various experienced doctors came to this castle, saying that they wished to remove the arrowhead with potions and other cures, but they were unable to. Finally I came to him. First, I made small probes from the pith of an elder, well dried and well stitched in purified linen [made to] the length of the wound. These probes were infused with rose honey. And after that, I made larger and longer probes, and so I continued to always enlarge these probes until I had the width and depth of the wound as I wished it. And after the wound was as enlarged and deep enough so that, by my reckoning, the probes reached the bottom of the wound, I prepared anew some little tongs, small and hollow, and with the width of an arrow. A screw ran through the middle of the tongs, whose ends were well rounded both on the inside and outside, and even the end of the screw, which was entered into the middle, was well rounded overall in the way of a screw, so that it should grip better and more strongly. This is its form [See Fig 2. and note]. I put these tongs in at an angle in the same way as the arrow had first entered, then placed the screw in the centre and finally the tongs entered the socket of the arrowhead. Then, by moving it to and fro, little by little (with the help of God) I extracted the arrowhead. Many gentlemen and servants of the aforesaid prince were standing by and all gave thanks to God. And then I cleansed the wound with a syringe [squirtillo] full of white wine and then placed in new probes, made of wads of flax soaked in a cleansing ointment. This is made thus. [Item] Take a small loaf of white bread, dissolve it well in water, and sift through a cloth. Then take a sufficient quantity of flour and barley and honey and simmer over a gentle heat until it thickens, and add sufficient turpentine oil, and the healing ointment is made. And from the second day, I shortened the said wads, soaked in the aforesaid ointment, every two

days and thus within twenty days the wound was perfectly well cleansed. And afterwards, I regenerated the flesh with a dark ointment (*Unguentum Fuscum*)(6) . And note that from the beginning right up to the end of my cure, I always anointed him on the neck, every day in the morning and evening, with an ointment to soothe the muscles (*Unguentum Nervale*) (7), and placed a hot plaster on top, on account of fear of spasm, which was my greatest fear. And thus, thanks to God, he was perfectly cured.”

[This translation of the relevant extract from Bradford’s *Philomena* is reproduced by courtesy of Dr. Matthew Strickland, Rutherford Research Fellow, Fitzwilliam College Cambridge. Senior Lecturer in Medieval History, University of Glasgow.] (8)

It is notable that Bradmore used honey in his aftercare of the wound, which is currently undergoing a renaissance as an antiseptic in modern surgical dressings. The post-operative spasm to which he refers with trepidation was probably tetanus. Bradmore mentions also that he was careful to massage Henry’s muscles twice daily with the nerve regenerating ointment, *Unguentum Nervale*. He writes elsewhere in his treatise that this ointment was, “good for chilled nerves and sinews”. (9) It is possible that he knew from experience that, even if the patient did not contract a fatal infection, such a wound as that suffered by the prince, might very well cause paralysis and disfigurement by damage to the nerve. Bradmore’s careful massage regime may have helped to spare Henry this complication. The patient, it seems, made an uneventful recovery. No paralysis or disfigurement to the left side of his face is recorded but it is interesting to note that a portrait of the young man, painted sometime after his coronation in 1413 shows him left profile.. (10) Whatever the case, Prince Hal did not forget Bradmore’s skill. At the time of the surgeon’s death in 1412, he was still receiving 10 marks a year from the household of the future Henry V. (11)

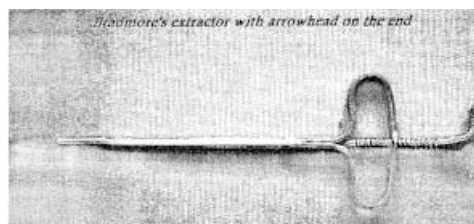


Fig 2: Bradmore's extractor, which was reconstructed from the specifications in the *Philomena* by the historical ironworker, Hector Cole. See Cole and Lang, pp 97-99 for this illustration and a description of the process.

* Josephine Cummins BDS MA PhD, dentist and historian, Glasgow

(1) Waurin (a Burgundian chronicler) II, 63, trans, *Chronicles* 60.

(2) Cole H and Lang T, "The Treating of Prince Henry's Arrow Wound, 1403" in *Jnl of the Society of Archer Antiquaries*, 2003, pp. 95-101.

(3) Thomas of Elmham, *Vita et Gesta Henrici Quinti*.

(4) Karger B, Sudhues H, Brinkmann B, "Arrow Wounds: Major Stimulus in the History of Surgery" In *World J. of Surgery*, 25, pp.1550-1555, 2001, p. 1553

(5) Bradmore, *Philomena*, British Library, MS Sloane 2272. See translation below.

(6) *Unquentum Fuscum*; a compound of resin and gums, probably mildly antiseptic. Cole and Lang, p. 97.

(7) *Unquentum Nervale*: a compound of more than 20 herbs, wax, butter and some resins. Bradmore gives the recipe at f.338v. Cole and Lang, p.97.

(8) Strickland S, Hardy R, *The Great Warbow*, Sutton, 2005, pp 284-5.

(9) Cole and Lang, p. 97.

(10) See Fig 1. above.

(11) For further details of John Bradmore's life see: Lang SJ, "John Bradmore and his book *Philomena*" in the *Social History of Medicine*, 5, 1992, pp. 121-30.