

Death of a king

Skeletal injuries of the last Plantagenet king

The discovery and analysis of King Richard III's skeleton is an amazing scientific detective story, told here by Andrew Hyam of Leicester University.

Richard III was killed at the Battle of Bosworth on 22 August 1485 and was the last English king to die in battle. After the battle he was brought back to Leicester and was buried in the Grey Friars church, where he was to remain for next 500 years.

At his death, Richard's enemy, Henry Tudor, became King Henry VII. Later, during the 16th century, the friary was closed and the land became a garden and, finally, a car park. In 2012 a team of archaeologists searching for the lost grave of King Richard found a skeleton which was eventually identified as that belonging to King Richard III.

Along with many other scientific and analytical techniques used during the identification process an osteologist, a forensic pathologist and a forensic engineer from the University of Leicester studied the wounds found on the skeleton. Their aim was to try to understand if these wounds were caused during battle and, if so, what sort of weapons could have caused them.

Specialists working together

An **osteologist** is a qualified archaeologist who specialises in the scientific study of bones, their diseases and injuries.

A **forensic pathologist** is someone who uses scientific techniques to study a body, or the remains of a body, in order to determine the cause of death.

A **forensic engineer** uses scientific and engineering methods and techniques to study materials, components or structures which fail or break.

In the case of Richard III, the pathologist and the engineer combined their methods to determine angles of attack, size and shape of weaponry etc.

An archaeologist at work on the Grey Friars site in Leicester

Key words

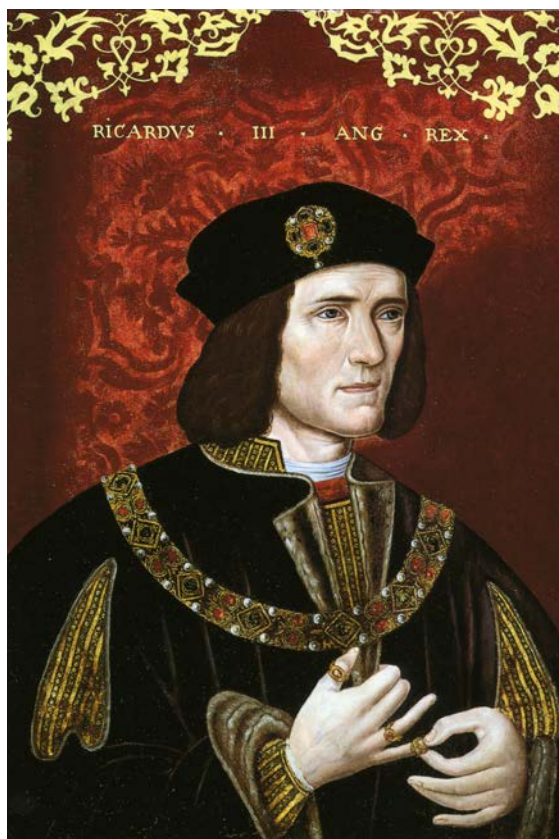
skeleton

archaeology

forensic science

A battle-hardened king

From contemporary accounts we know that Richard was experienced in battle and was regarded as a good commander. Medieval battles were face-to-face hard-fought affairs often leading to confused and localised fighting. Accounts also tell us that during the battle Richard saw an opportunity to win by leading a cavalry charge across the battlefield deep into the enemy's ranks. Richard got close enough to Henry Tudor to be able to kill the standard bearer who would have been at Henry's side.



Richard III towards the end of his life. The original of this portrait is in the National Portrait Gallery in London.

At this point the course of the battle, and the course of history, turned when Richard lost his horse. We don't know how this happened but we can assume he was in the thick of the fighting and surrounded by his enemies.

The clock is now turned forwards to 2012 to a car park in Leicester where the skeletal remains were discovered and were subsequently analysed and identified as those belonging to King Richard III. Amongst other things the investigation revealed a total of eleven injuries on Richard's bones, most of which were around the head. These wounds were caused at or around the time of death – 'peri-mortem'. It must be borne in mind that the injuries which were seen do not include any soft tissue damage which may have been inflicted. Unfortunately soft-tissue does not often survive for archaeologists to study. This is very much like a cold-case murder investigation where a lot of potential evidence is missing.

A life or death struggle

As a 15th century re-enactor with my own armour, I am in the fortunate position to help build up a possible sequence of events during Richard III's last moments in battle. As none of the injuries overlap each other it is difficult to state precisely in what order they occurred. However, from my knowledge and experience of using medieval armour and weapons, what follows is my interpretation of the events. Also, because we only have the skeletal evidence the following scenario is only one of a number of variations which can be postulated given the same evidence. What is important is that we must only use the available evidence for any interpretation. This is one of the many attractions of archaeology when trying to reconstruct the past.



Typical 15th century plate-armor giving all-round protection especially to the head area; King Richard III's armour would have been considerably more ornate.

Given that Richard's armour would have been fit for a king and offered the best protection during battle, especially around the head, why did he sustain so many head injuries? From wearing similar armour I know that it can be difficult to breathe and shout orders when my face visor is down. Perhaps, after losing his horse Richard lifted his visor and sustained his first injury which was a stab to the cheek by a small dagger.

To be attacked by a dagger shows just how close his enemy was. The wound, although painful, is not life threatening but the assailant appears to have

then cut the chin strap holding his helmet on. This was such a hard cut that the blade not only cut the chinstrap but also cut into Richard's jawbone leaving a permanent record for us to analyse.

At this point without a helmet Richard would be in serious trouble as although his body was still protected by plate armour his head was now exposed and vulnerable. This would have been the signal for many other opponents to start a ferocious attack on him. At the same time Richard's men would be desperately fending them off and trying to get the king to safety.

Blows to the head

Shallow saucer-like cuts on the top and back of the skull show where one or more swords were trying to hack into his head. The press of people was possibly so dense that they could only achieve glancing blows which shaved off patches of scalp and thin slivers of bone. This shows how incredibly sharp a medieval sword could be – not the heavy blunt weapons often portrayed by Hollywood. Although extremely painful the injuries sustained so far would be survivable if medical attention was available; unfortunately for Richard this was not an option at Bosworth.



Typical medieval swords

The sword blows were likely to have stunned Richard who may have fallen or been dragged to his knees as the next wound is at the top of the skull. A small square-section hole has partially penetrated the skull and was possibly caused by a Rondel dagger. Rondel daggers are particularly unpleasant weapons designed to be placed on the top of a victim's skull and driven through into the brain by a sharp blow resulting in instantaneous death. In Richard's case this blow did not do this which again may indicate that the press of people around him prevented a clean killing blow.

Although he was probably still alive the number and severity of the blows to the head would probably have stunned him or even knocked him unconscious. Remember, we don't have any soft-tissue evidence so cannot be sure of any other additional injuries caused at the same time.



Rondel dagger showing square section blade and extremely sharp point

Once face down on the ground more assailants may have moved in. These included a person armed with a halberd (a lethal weapon with a multi-function blade, spike and hook on a long pole) and another with a sword. The sword was driven point-first into the base of the skull with such force that it passed through the brain and only stopped when it hit the opposite side of the skull. Around the same time a halberd was used to slice off a large section of skull near to the base which would have exposed brain tissue. If not already dead either of these blows would be capable of causing Richard's death.



A 15th century halberd of German design

A final injury caused either during the fighting, or as a post mortem injury, was a cut through the buttock which left a permanent mark on the pelvis. Either a sword, or more likely a halberd, was used for this. A number of possibilities exist as to how this may have occurred. One possibility is that it was done after death as a humiliation injury to show how much someone hated the former king.

Alternatively it may have been caused during battle as the only exposed spot on an armoured knight is where he sits on his horse. If laid face down on the ground the backside is exposed to such an attack. An injury which was definitely caused after death was a small dagger cut to a rib. This was possibly caused by another humiliation injury or by the action of cutting his armour and clothing off on the battlefield.

King Richard III's injuries show just how close up and frenzied his final battle was. The whole series of events would probably be over in a matter of minutes at most. Accounts credit a Welsh Lancastrian with killing Richard but the number of weapons used indicates that many people were involved.

Andrew Hyam is a full-time field archaeologist working for the University of Leicester Archaeological Services. He has been involved with the Grey Friars project as part of the outreach team demonstrating and interpreting the last moments of King Richard III's life. He is a 15th century re-enactor with his own full harness of armour and associated weaponry.

Look here!

The Grey Friars Project was a collaborative project between the University of Leicester, the Richard III Society and Leicester City Council.

See images of King Richard's damaged bones in this academic paper: tinyurl.com/pgyd2cc

Further information on the search for King Richard III and his injuries: www.le.ac.uk/richardiii