The final lord of Gifu Castle was Oda Hidenobu, also known as Samboshi, who ruled the castle from 1592 to 1600. Hidenobu was the son of Oda Nobutada (1557–1582) and grandson of Oda Nobunaga (1534–1582). He was just two years old in 1582 when his father and grandfather were betrayed in Kyoto by Akechi Mitsuhide (1528–1582) at Honnoji temple and Nijo Castle. After the death of Nobunaga and his eldest son, his second son, Nobukatsu (1558–1630), and his third son, Nobutaka (1558–1583), disputed who was the rightful heir to the clan. At the clan leadership meeting held at Kiyosu Castle, Toyotomi Hideyoshi (1537–1598) asserted that in fact the infant Hidenobu should be made leader. Hidenobu was ultimately made the head of the clan, but political power was functionally held by Hideyoshi.

Hidenobu controlled Gifu Castle in 1600. The castle was considered an important element to the Eastern forces' plan to defeat the Western armies. Because of this, Gifu Castle was attacked by Fukushima Masanori (1561–1624) and Ikeda Terumasa (1565–1613) just before the Battle of Sekigahara in 1600. Upon realizing their defeat, Hidenobu's samurai committed ritual suicide inside the castle, and the bloodstained floorboards are said to have been later used to construct the ceiling of Sofukuji temple in Gifu city. After the battle Hidenobu renounced the world and became a priest but he died only five years later.