A Sumatran tiger underwent surgery at the Sacramento Zoo on Tuesday to remove obstructions caused by stones in its urinary tract.

Surgeons from the University of California, Davis, School of Veterinary Medicine and the zoo began performing the minimally invasive procedure in the early morning. It was expected to be completed by 1 p.m.

Doctors implanted thin, flexible tubes through the cat's right side that will allow urine to drain from its kidneys to its bladder.

The 15-year-old male tiger named Castro is from Sumatra, an island in western Indonesia. It has been at the Sacramento Zoo since 1999.

It is one of about 200 Sumatran tigers in zoos around the world. Fewer than 500 are believed to live in the wild.

Harrison Edell, general curator of the Sacramento Zoo, said in a telephone interview that doctors faced several challenges because of the cat's old age and other medical problems. Earlier this year, Castro was diagnosed with lymphoma, a type of cancer, and is undergoing chemotherapy.

"A lot of these medical issues are sort of related to one another," he said.

Pat Bailey, a spokeswoman at UC Davis News Service, said blood tests indicated Castro seemed to be responding well to cancer treatment.

It was unclear how long the cat's recovery period from the surgery would be.

"We're not going to have him out on exhibit if he's not feeling 100 percent," Edell said.

The cat has fathered five offspring, including CJ, born in March at the Sacramento Zoo. Its first granddaughter, Jillian, was born in February at the San Francisco Zoo.