Johanna Savilampi was born in Joensuu, Finland in 1977. She received her M.D. degree in 2005 at Umeå University. In 2006 she started her training in anaesthesiology at Örebro University Hospital and became a specialist in Anaesthesiology and Intensive Care in 2012. The doctoral thesis was done in professor Magnus Wattwil’s research group at Örebro University Hospital.

Pulmonary complications like pneumonia are common perioperatively, and one potentially important cause may be silent aspiration. Several levels of defence against pulmonary aspiration can be affected by drugs in anaesthesia: competence of esophageal sphincters prevents regurgitation of gastric content, and complex reflex systems guard direct entrance into the airway.

The aim of this thesis was to study the effect of the opioid remifentanil on different components of airway protection using manometric methods, and to explore by a scintigraphic method whether remifentanil increases the risk of pulmonary aspiration. The purpose was also to determine whether remifentanil induces subjective swallowing difficulties.

This thesis found that, at doses used in clinical settings, remifentanil increases the incidence of aspiration in healthy volunteers. Remifentanil impairs several mechanisms that protect the airway, which may increase the risk of pulmonary aspiration. Remifentanil also appears to induce subjective swallowing difficulties when dry swallows are performed.

In summary, these findings may improve use of remifentanil in clinical practise, especially regarding spontaneously breathing patients in the monitored anaesthesia care setting.