

# 6 Years Experience with the Da Vinci Robotic System in Thoracic Surgery

## A Single Center Report



B. Hokschi, E. Hofmann, A. Rusu, R.A. Schmid  
 Division of General Thoracic Surgery, University Hospital Bern, Switzerland

### Introduction

One of the most important technical developments of minimally invasive thoracic surgery in recent times is the robotic-assisted operative procedure. The benefits of the robotic-assisted surgery in comparison to the video-assisted surgery are:

A: translation of hand movements into micro-movements and elimination of hand tremor  
 high instrument mobility at distal articulations ("wrists")

B: availability of high definition 3D-imaging

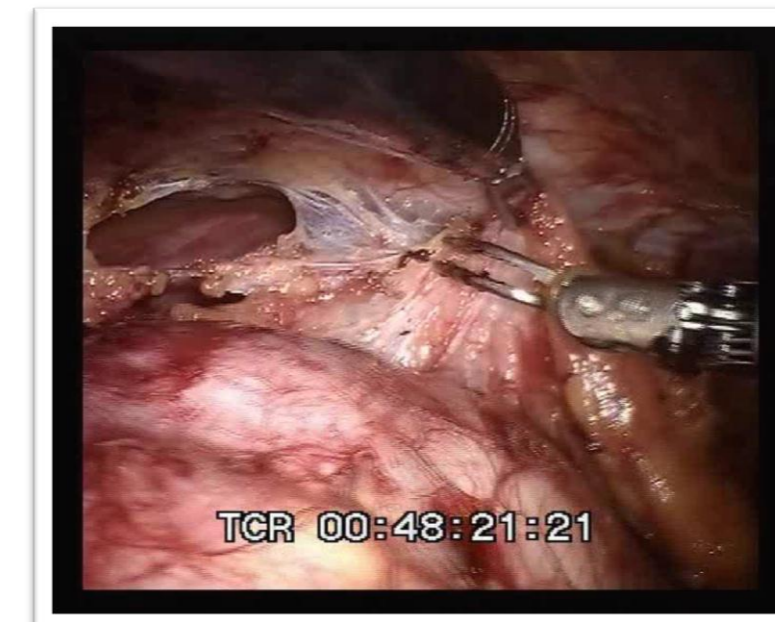
C: improvement of ergonomic conditions for the surgeon.



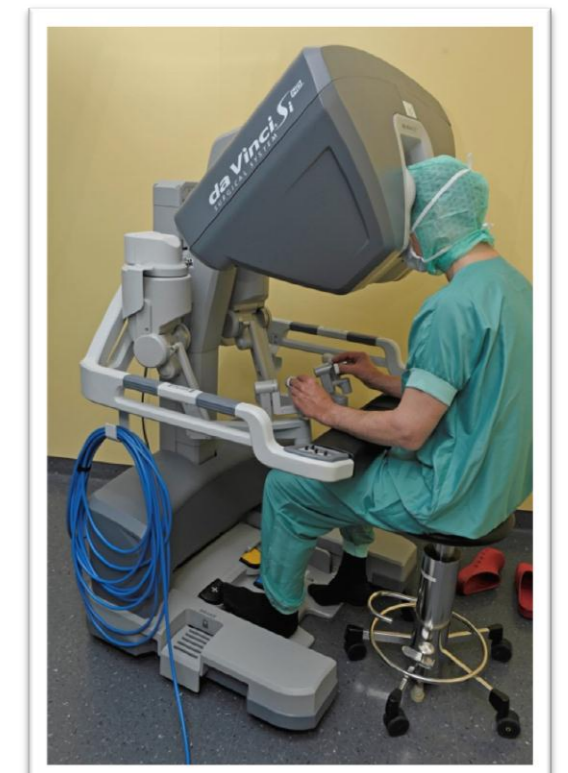
A



B



B

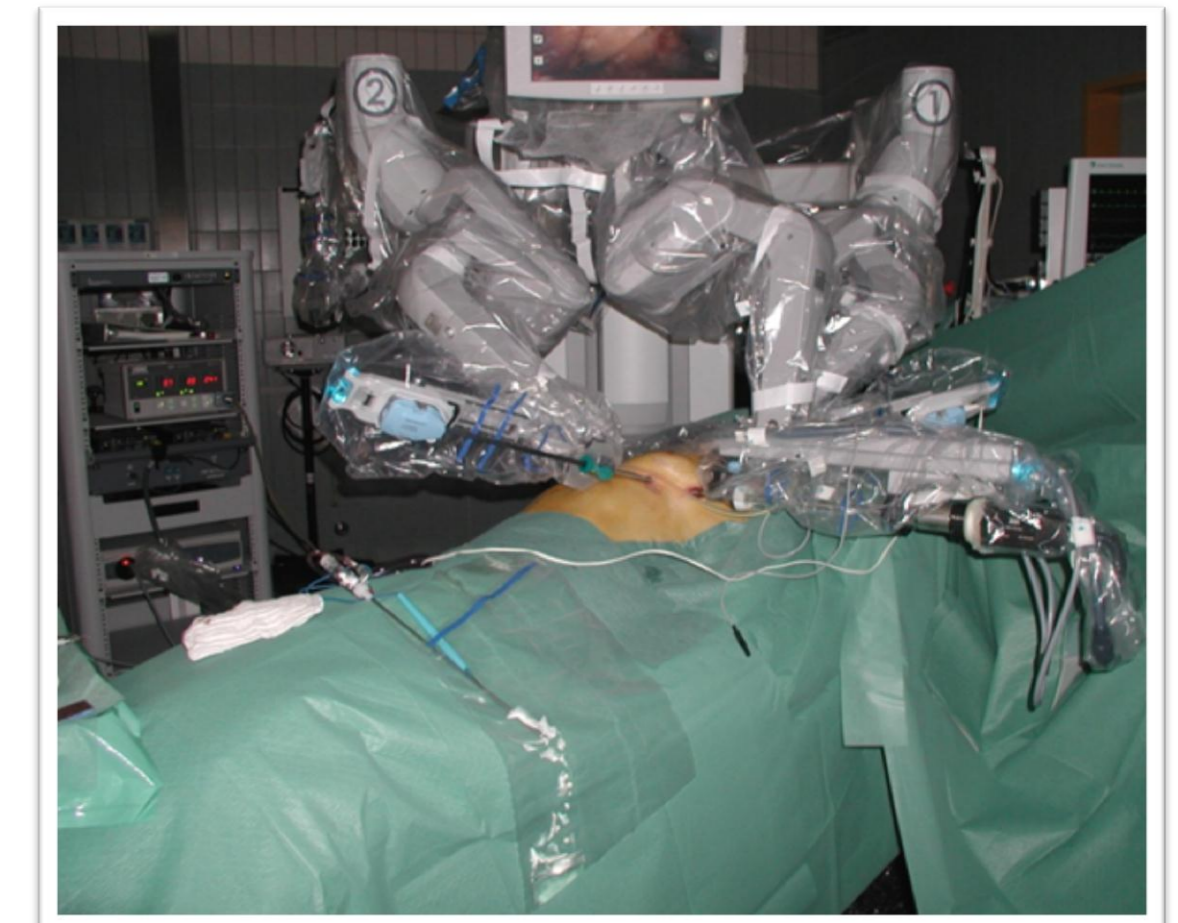


C

Robotic-assisted technology has been available now for more than 15 years and the acceptance of robotic-assisted operations with the Da Vinci Robotic System in thoracic surgery is growing rapidly.

### Methods and Patients

The Da Vinci robotic system became available in our division in June 2007. After a period of training we used the robotic system to treat a total of 65 patients with various thoracic diseases. Surgical procedures were thymectomy (n=34), lobectomy (n=9), lymph-node-dissection (n=5), resection of neurinoma and bronchogenic or pericardial cyst (n=17).



Position of a patient for thymectomy. The position of the crew and the surgeon in the OR.  
 Arrows = side of trocar incisions

The Da Vinci System in action.

### Results

Operative mortality was 0 %, with no in-hospital or perioperative deaths. The median length of stay was 4.2 days (range, 1-44 days). Two patients (3.1 %) experienced a relevant postoperative complication: One phrenic nerve injury after lobectomy with mediastinal lymph-node dissection, and one chylothorax after paraesophageal lymph-node dissection.

### Conclusion

Robotic assistance for thoracic surgery is feasible and safe. The future directions for study of the robotic-assisted technology in thoracic surgery include further refinement of the technique and the validation of the adequacy of the oncologic results.

### Perspective

The University Hospital Bern opened the first European center for robotic-assisted and minimally invasive thoracic surgery to ensure a close cooperation of the most experienced thoracic surgeons in Europe.