Editor's Note:
The IASLC 18th World Conference on Lung Cancer (WCLC) was successfully held in Yokohama, Japan, from October 15th to 18th. During the conference, we were glad to have a brief interview with Dr. Erik Thunnissen from the VU University Medical Centre in Amsterdam, The Netherlands.

Meet the Professor

Dr. Erik Thunnissen: how to appropriately optimize the handling of surgically resected specimens

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Interview (*Figure 1*)

TLCR: In this year's WCLC event, you are the expert in the "Meet the expert" session about the topic "Appropriate and Optimized Handling of Surgically Resected Specimens". What do you think are the major challenges in managing the Surgically Resected Specimens? Would you like to share your team's experience?

Dr Erik Thunnissen: First of all, there has to be a proper diagnosis. In the end for the surgeon and the oncology team, and also if there is a tumor, we need to see its resection margin, if the resection margins are free or not. In the case of lobectomy, there is a huge specimen, and it usually collapses, and so it influences the architecture of the lung, because the width of the lung is about like this. We receive it with about one third of the original width. Then the handling needs to be oriented in the same way as it was in the patient to understand the position. During the whole procedure, the 3-dimensional location in relation to the patient needs to be maintained. So we make pictures, in the unfixed (fresh) situation from two sides, so we can have reasonable images.

Subsequently, we describe the specimen and then also take one sample for research, so we freeze the normal tissue and tumor tissue. Then we try to fix the normal lung, which has many segments in between. So we fix it by perfusion of the lung with formalin. But the perfusion goes into the lung with subsegmental structures, alveolar spaces and that does not reach the tumor. In order to fix the tumor properly we also need to cut through the tumor, and then leave some gauze or bandage in between (the cuts) so that the fixative can easily go into the tumor.

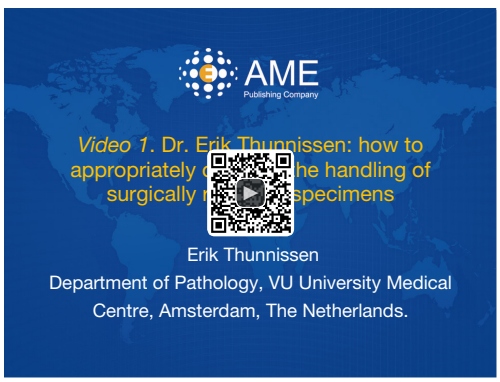

Figure 1 Dr. Erik Thunnissen: how to appropriately optimize the handling of surgically resected specimens (1).
Available online: http://www.asvide.com/articles/1835

If you do not take care of proper fixation, then it may rather be feasible next day after 24 hours. When you take the specimen out of the bucket with fixative, you look at it, and some parts may not be fixed yet, meaning the delay in fixation is 24 hours. And then it will have an impact on the protein preservation. If you then immunohistochemistry later on, or maybe that part is negative, while if it would be fixed properly it would be positive. So important is proper fixation of the specimen. The next day you cut the specimen in different slices, maintain the orientation, put the slices in sequence order and then make photographs. Each slice has two axes, for example, one is in the medial side, one is in the lateral side, and the other axis is then from ventral to dorsal. So you can designate the orientation of each slice plus all the slices are then ordered form cranial to caudal. You need

to mark the orientation on the photographs so that you can see where was what in the position looking to the patient, and then describe the slices where the tumor is and also denote the distance from the tumor to the margins, the bronchial margin, the distance to the pleura. The next part is taking the sections out for the microscopy. So that you know the samples, which you study in detail for diagnosis and also distance to the margins. Those blocks you take also have to be placed on the photographs, so you know where the blocks come from easily.

Taking photographs is actually very useful, because it helps you understand the original specimen and how it was handled into slices, and which parts of the slices have been looked for detailed microscopy. So when you got those photos, we bring them to the molecular tumor board meeting and we discuss with surgeons: Hey, you took out this specimen, and we can see where the tumor is, and whether it is close to the margin or in the margin. We discuss if we think it is R0 or R1 (microscopic positive) or R2 abundant positive what the surgeon should have known or could have seen or possibly said already yeah 'we could not get it free' from that side. So then we also demonstrate it as such. So that is one thing: feed back to the surgeon.

Sometimes in the lung there are also additional features, like lesion adjacent to the tumor and the radiologist may call it benign or malignant, so we can give a feedback because in that additional lesion we also look for microscopy. We can see benign or Langerhans cell histiocytosis or something else. We can give specific diagnosis for the region, where they are interested in. And also necessarily, we can return the feedback to radiation oncologists. Because, if there are some local spots where the tumor is in the margin, they can radiate after surgery if that is still possible, and we can say that is the specific position where you look for taken from the patient and that goes in collaboration with surgeons.

So, one of the very useful things is to take a lot of photographs for the whole procedure, because you can always come back by the photographs when you think maybe there is something else left we did not look for and take another block.

You need to review the whole process, and they're helpful in facilitating communication between different experts involved in lung cancer.

TLCR: Do you have any suggestions for the career development of a young doctor?

Dr Erik Thunnissen: Progress in science is made by knowledge, so you can start learning the basics and learn more into the chemical structures of the molecules. So personally I think that understanding the three dimensional structures at nanomolar level is very important and know the (relevant) association. When you want to be a medical researcher you need a chemical education as well. That combination may be very powerful in the near future. So if you are able to gain more knowledge in that direction, I guess: go for it.

TLCR: At last, what latest advances shared in the WCLC conference this year has impressed you most?

Dr Erik Thunnissen: The issue of intra-tumor radiotherapy is very interesting. I think it is a very difficult subject, because there is a lot of plasticity in the tumor cells. And also there is also information in a paper from Ramirez who says an individual cell can give different escape mechanism in the end when it growth out. So the knowledge of intra-tumor radiotherapy may be important. It may be practiced in patients to see what will occur. So this is an interesting area and good that there was a lot to talk about.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Poon B, He CX. Dr. Erik Thunnissen: how to appropriately optimize the handling of surgically resected specimens. Asvide 2017;4:516. Available online: http://www.asvide.com/articles/1835

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