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Die perkutane transluminale Rekanalisation chronischer Arterienverschlüsse



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HABILITATIONSSCHRIFT

# Die perkutane transluminale Rekanalisation chronischer Arterienverschlüsse

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# List of Abbreviations

**CAD** coronary artery disease

**PCI** percutaneous coronary intervention



# List of Original Articles

The following original articles will be discussed within this habilitation thesis:

1. **Grüntzig, A. R.** *Die perkutane Rekanalisation chronischer arterieller Verschlüsse (Dotter-Prinzip) mit einem neuen doppelumigen Dilatationskatheter in RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren* **124** (1976), 80–86.
2. **Grüntzig, A. R.**, Senning, Å. & Siegenthaler, W. E. Nonoperative dilatation of coronary-artery stenosis: percutaneous transluminal coronary angioplasty. *New England Journal of Medicine* **301**, 61–68 (1979).



# 1 Summary of the Habilitation

Write the summary of your habilitation (max. 300 words).



## 2 Introduction

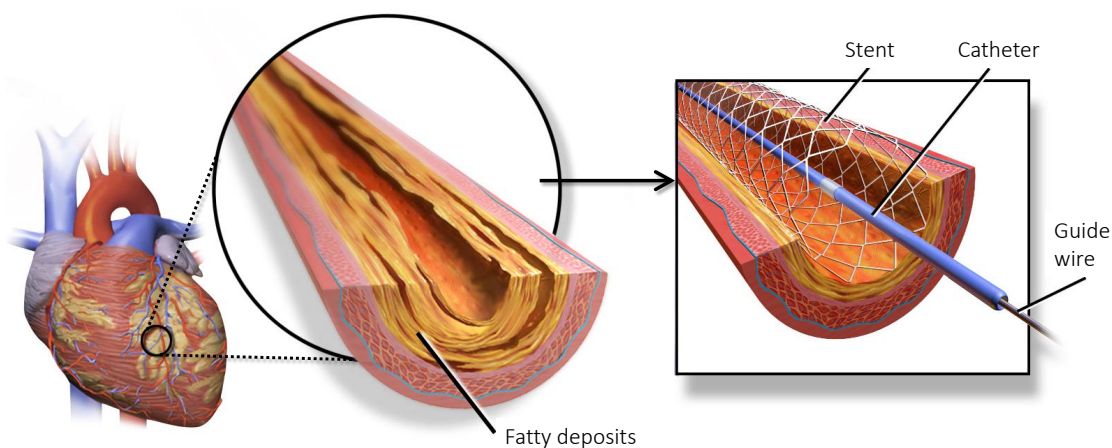
Write the introduction. The introduction should be 2–5 pages long (approx. 1000–2500 words) and should give an overview of the state of the art in the respective field of research.

### 2.1 Coronary Artery Disease: Pathology, Diagnosis, and Therapy Options

Coronary artery disease (CAD) is defined by luminal narrowing of the coronary arteries as illustrated in FIGURE 2.1.

#### 2.1.1 Percutaneous Coronary Intervention

An introduction to CAD was given in SECTION 2.1. The first percutaneous coronary intervention (PCI) was performed at the University Hospital Zurich by Andreas Grüntzig<sup>2,3</sup>.



**Figure 2.1: Coronary artery disease.** A coronary artery narrows due to fibrofatty plaques. Coronary stents can be used for interventional revascularization. Image courtesy of Blaus, B<sup>1</sup>.





## 3 Summary of the Original Articles

Write the summary. Original articles used in the habilitation should be summarized separately.

### 3.1 Percutaneous Recanalisation

The following paper describes percutaneous recanalisation with a new double lumen dilatation catheter\*:

**Grüntzig, A. R.** *Die perkutane Rekanalisation chronischer arterieller Verschlüsse (Dotter-Prinzip) mit einem neuen doppelumigen Dilatationskatheter in RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren* **124** (1976), 80–86.

A modification of Dotter's transluminal recanalisation of stenoses and occlusions of the superficial femoral artery, and of stenoses of the iliac artery, is described. In this procedure the occluding material is compressed not by successive catheters, but by a catheter with a dilatable cover. This catheter consisted originally of a single lumen, but now has double lumen; one lumen accommodates contrast, or a guide wire or a stiff cannula, whereas the second lumen is used for filling the cover and the expandable segment. The procedure is described in detail. Results so far appear satisfactory; they are compared with the results which have been obtained during the last year with the single lumen catheter.

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\*This and all following publications are presented as edited versions of the papers' abstracts.



## 4 Discussion

Write your discussion. The discussion section consists of a critical discussion of the results of your work against the background of the international state of knowledge (including references), an appraisal of the overall work with regard to the knowledge gained, the limitations, and an outlook for potential further research questions. This section should be about 5–10 pages (2000–4500 words) in total.



## 5 References

1. Blaus, B. *Medical gallery of Blausen Medical 2014* <http://dx.doi.org/10.15347/wjm/2014.010>. Online; accessed 09-27-2019; adapted according to Creative Commons Attribution 3.0 Unported (CC BY 3.0) license. 2014.
2. Meier, B., Bachmann, D. & Lüscher, T. F. 25 years of coronary angioplasty: almost a fairy tale. *The Lancet* **361**, 527 (2003).
3. Grüntzig, A. R., Senning, Å. & Siegenthaler, W. E. Nonoperative dilatation of coronary-artery stenosis: percutaneous transluminal coronary angioplasty. *New England Journal of Medicine* **301**, 61–68 (1979).



## **6 Appendix: Original Articles of the Habilitation**

The original articles discussed in this habilitation thesis are reprinted in the following.





GRÜNTZIG, Andreas R.

**Die perkutane Rekanalisation chronischer  
arterieller Verschlüsse (Dotter-Prinzip) mit einem  
neuen doppelumigen Dilatationskatheter.**

In: *RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren.*

© Georg Thieme Verlag KG Stuttgart

New York, 1976. S. 80-86.



GRÜNTZIG, Andreas R.; SENNING, Åke; SIEGENTHALER, Walter E.

**Nonoperative dilatation of coronary-artery  
stenosis: percutaneous transluminal coronary  
angioplasty.**

New England Journal of Medicine  
1979, 301. Jg., Nr. 2, S. 61-68.



## 7 Statement of Authorship

I hereby declare that this work entitled

*Die perkutane transluminale Rekanalisation chronischer Arterienverschlüsse*

is independently written by me and in my own words. No unauthorized assistance was used. I have not used any aids or sources other than those indicated. All text passages quoted or paraphrased from foreign publications have been indicated as such. If artificial intelligence tools (e.g., ChatGPT) were used, they were indicated accordingly. This thesis was not submitted for any other degree or diploma of any university or other institution.

Zürich, 1. Juni 1977

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Dr. med. Andreas Roland Grüntzig



## **8 Acknowledgments**

Write your acknowledgments.