

# Will Surgery Improve Outcome in Pancreatic Neuroendocrine Incidentalomas?

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# NET i bugspytkirtlen

## Pankreas incidentalomer

- Stigende hyppighed
- Flere CT skanninger



# Pancreas NET

- Kun kirurgi er kurativt
- Kirurgi skal forbedre overlevelse eller velvære
- Er der evidens for det?







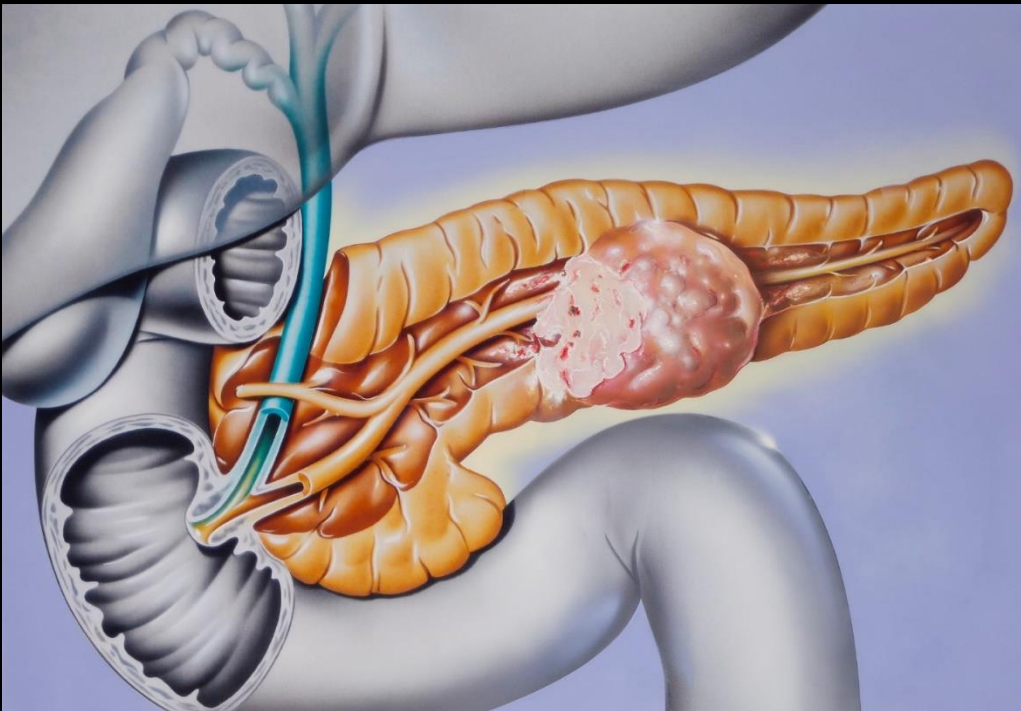






# Case

- 55 år
- Tilfældigt fund af 4 cm tumor



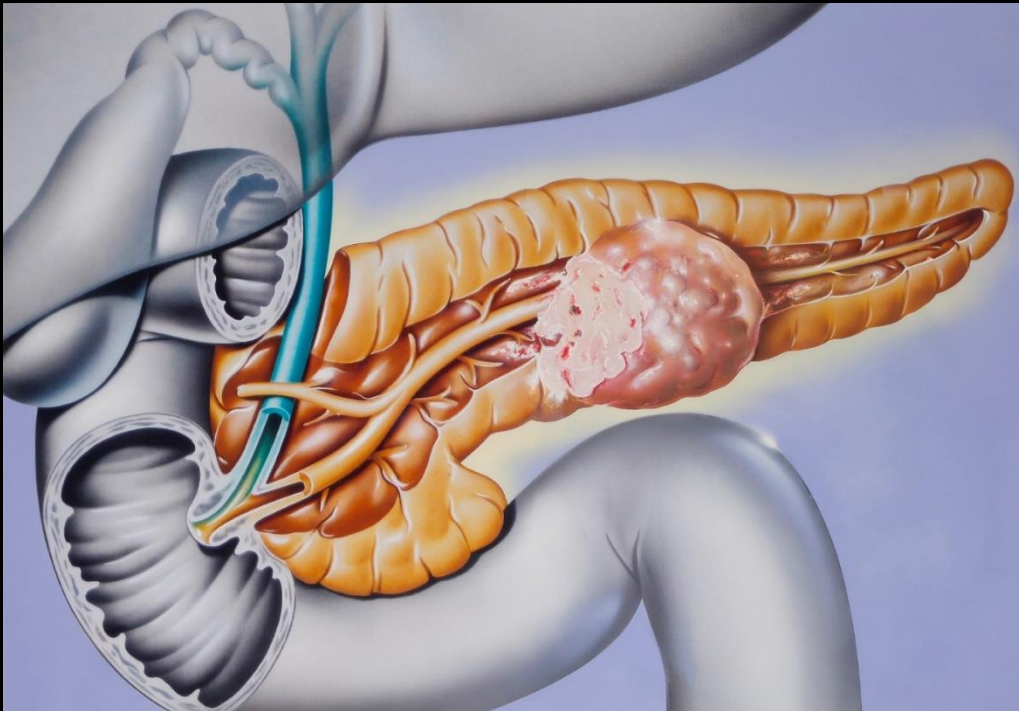
# Før kirurgi...

- CT scanning med kontrast
- $^{68}\text{Ga}$  Gallium dotatoc PET/CT
- Hvis muligt en biopsi (type og væksthastighed)
- Hvis høj vækst så FDG PET
- Vurdering af om patienten kan holde til operation (operabilitet)

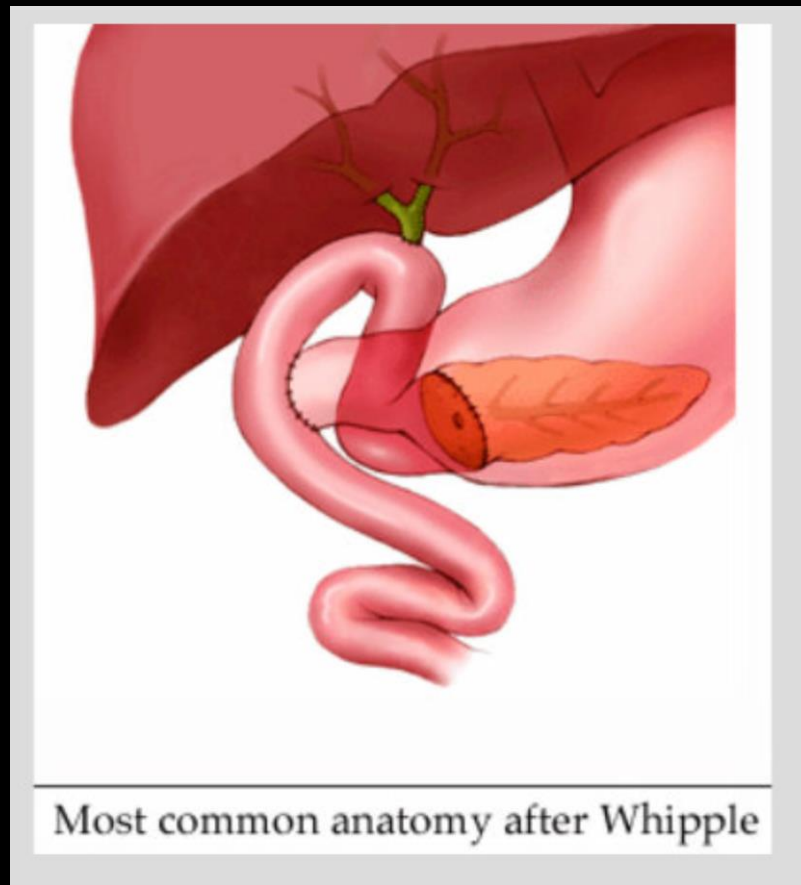
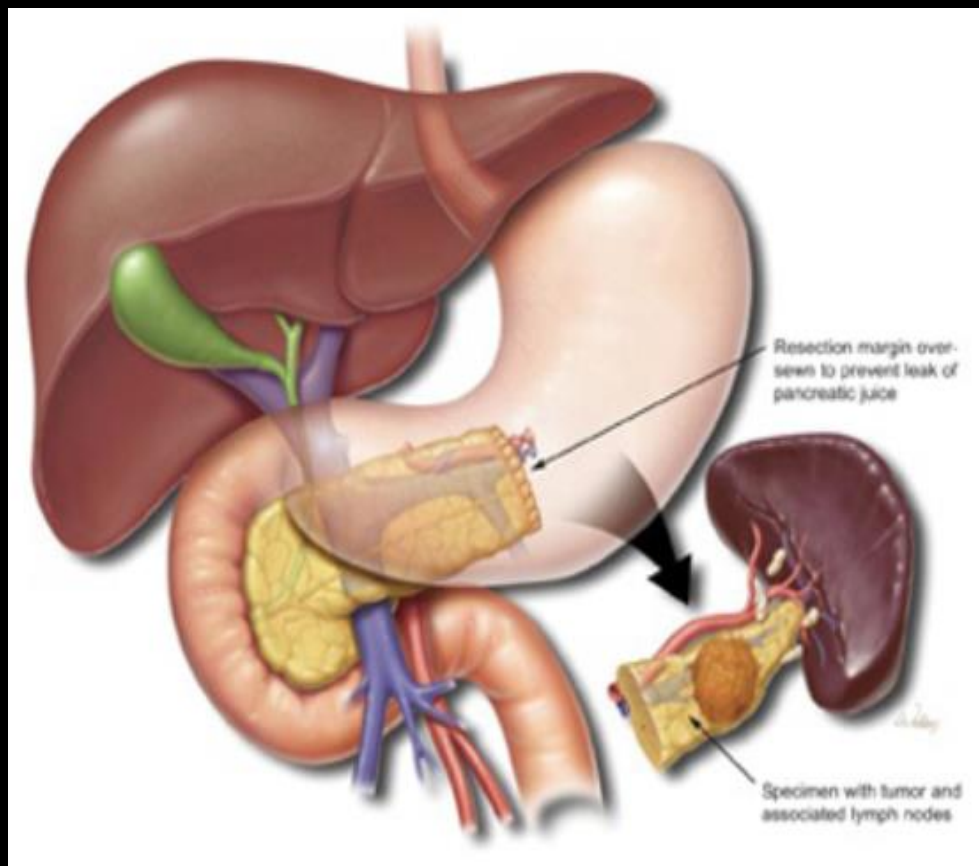


# Case

- 4 cm. Grad 1 NET. Lokaliseret
- Patient operabel og tumor er resektabel
- Lever han længere hvis han bliver opereret?



# Kirurgiske indgreb



# Komplikationer

- Fordøjelsesproblemer
  - Whipple >60 %
  - Distal 10-20 %
- Nedsat livskvalitet
  - Kronisk smerte
  - Bakteriel overvækst




# **ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumours: Surgery for Small Intestinal and Pancreatic Neuroendocrine Tumours**

Partelli et al. Neuroendocrinology 2017

- ✓ Localized pNEN >2cm should be operated on aggressively with formal pancreatic resection and systematic lymphadenectomy

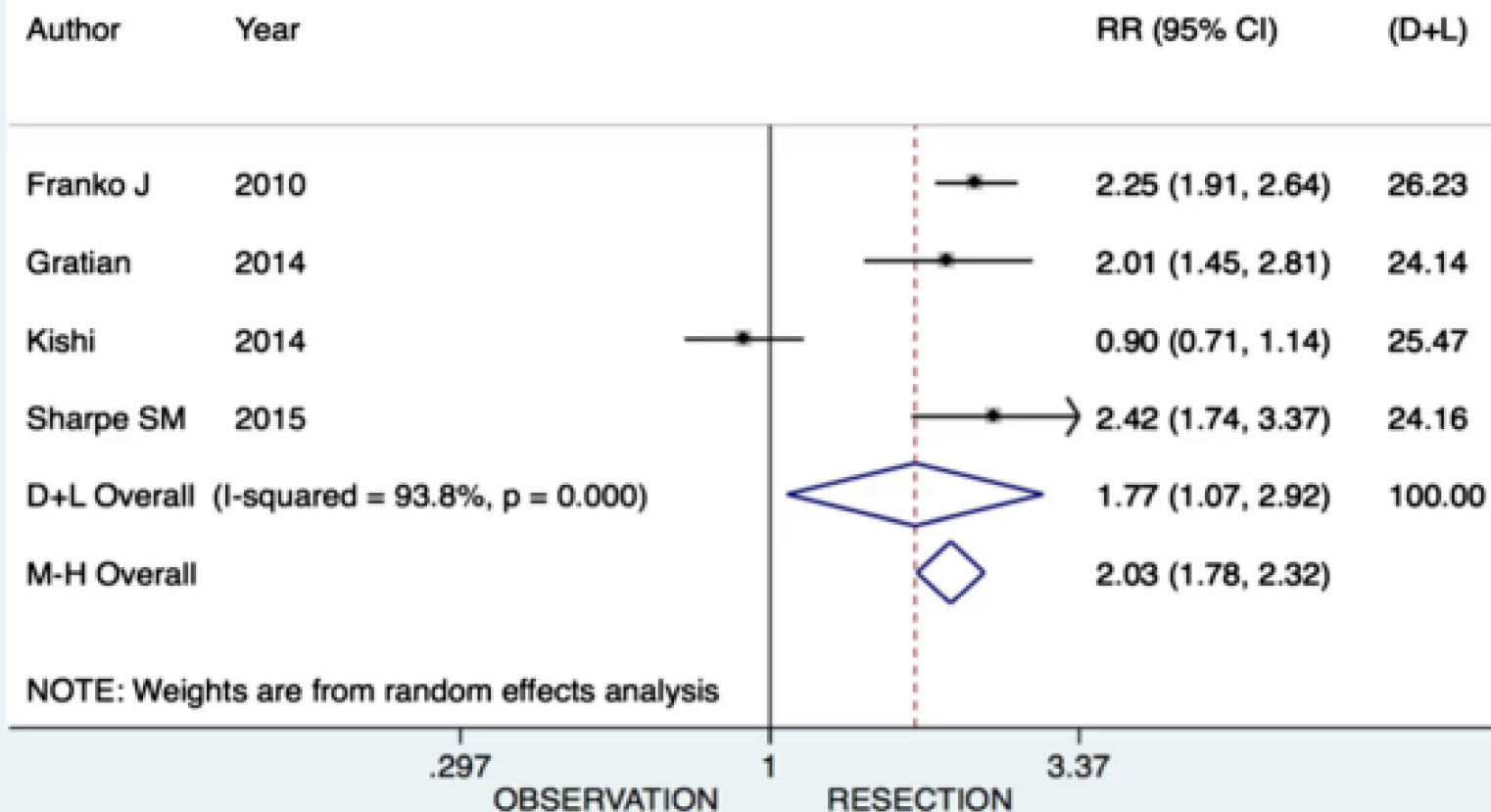
Er guidelines baseret på solid evidens?

# **Pancreatic Neuroendocrine Tumors (panNETs): Analysis of Overall Survival of Nonsurgical Management Versus Surgical Resection**

Paige Finkelstein<sup>1</sup>  · Rishika Sharma<sup>1</sup> · Omar Picado<sup>1</sup> · Rahul Gadde<sup>1</sup> · Heather Stuart<sup>1</sup> · Caroline Ripat<sup>1</sup> · Alan S. Livingstone<sup>1</sup> · Danny Sleeman<sup>1</sup> · Nipun Merchant<sup>1</sup> · Danny Yakoub<sup>1</sup>

- Meta-analyse : 11 studies (2017)
- 1491 opereret
- 1607 ikke opereret
- Operation øgede 5-års overlevelsen med en risiko ratio på 2.0

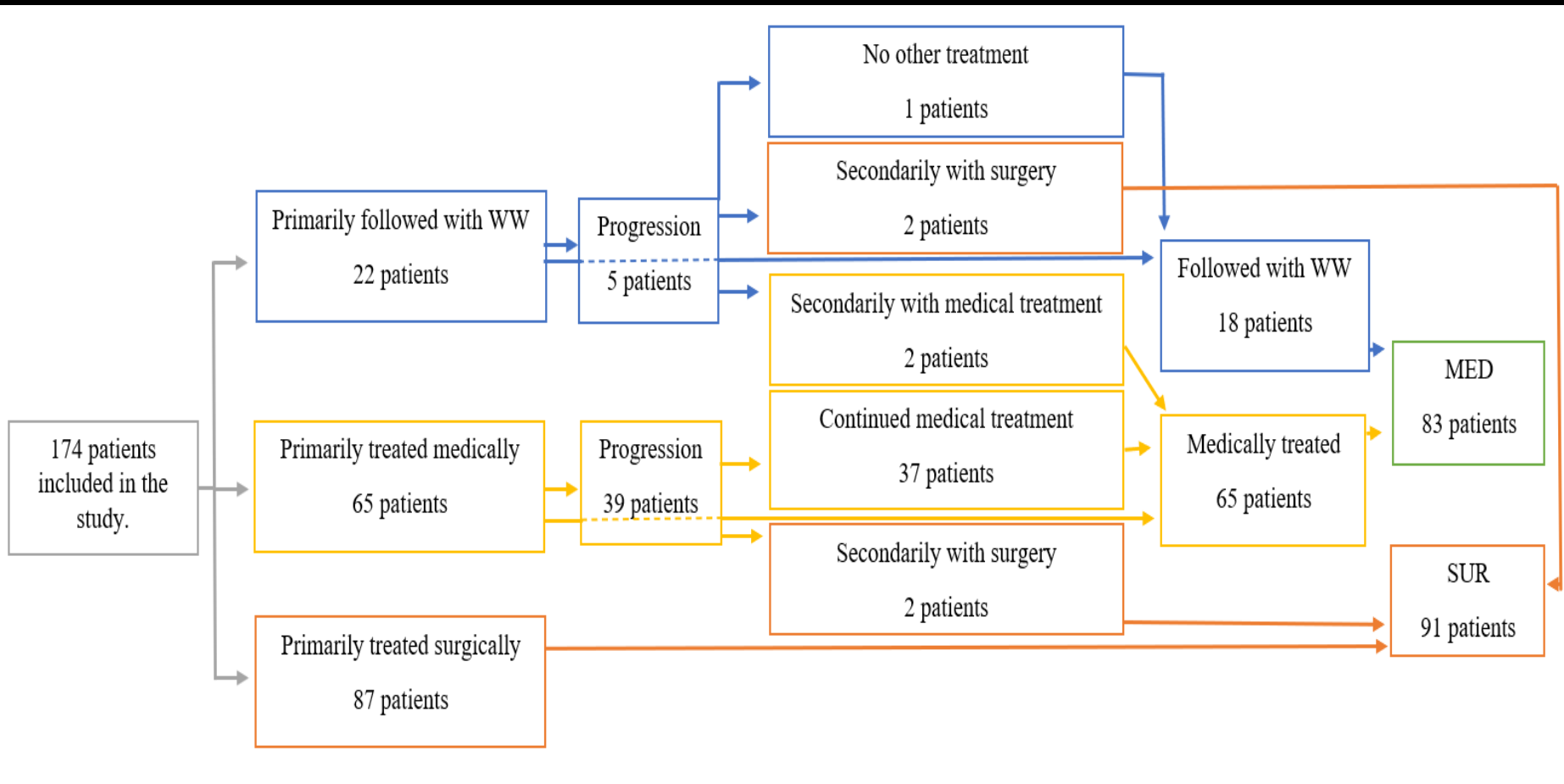
# Grupperne er ikke ens. Der er Ikke trukket lod





# 174 bugspytkirtel NET

## Retrospektiv opgørelse

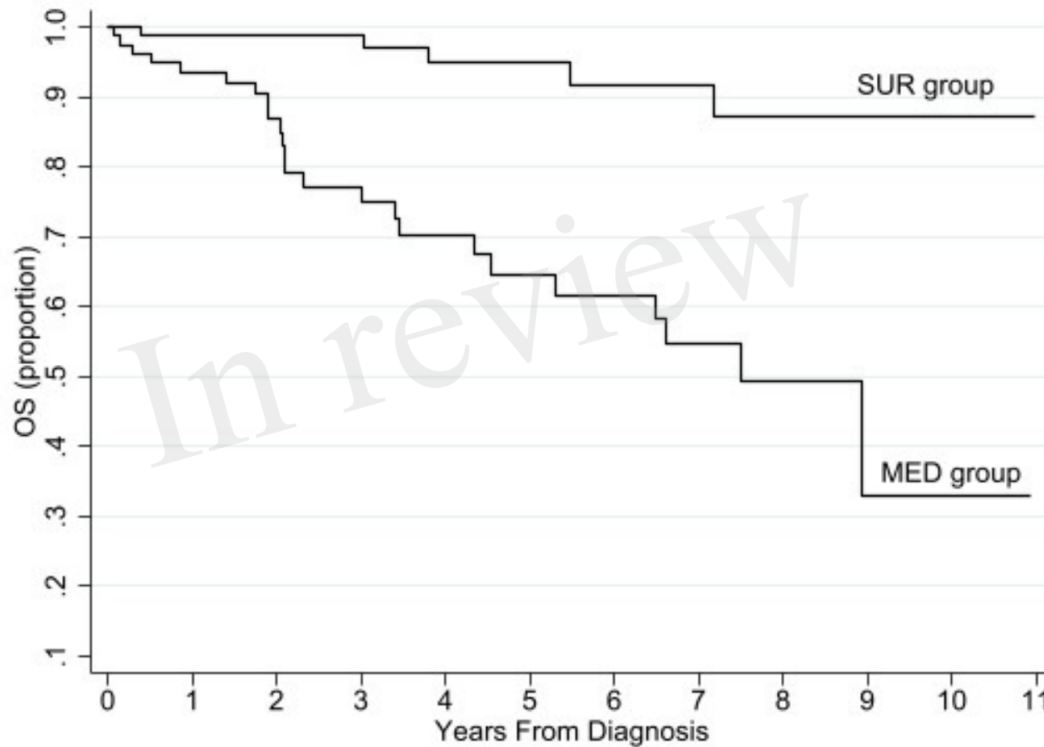


# Predicting Progression, Recurrence, and Survival in Pancreatic Neuroendocrine Tumors: A Single Center Analysis of 174 Patients

Sara Krogh<sup>1</sup>, Henning Grønbaek<sup>1</sup>, Anders Riegels Knudsen<sup>2</sup>, Peter Kissmeyer-Nielsen<sup>2</sup>, Nynne Emilie Hummelshøj<sup>1</sup>, Gitte Dam<sup>1</sup>

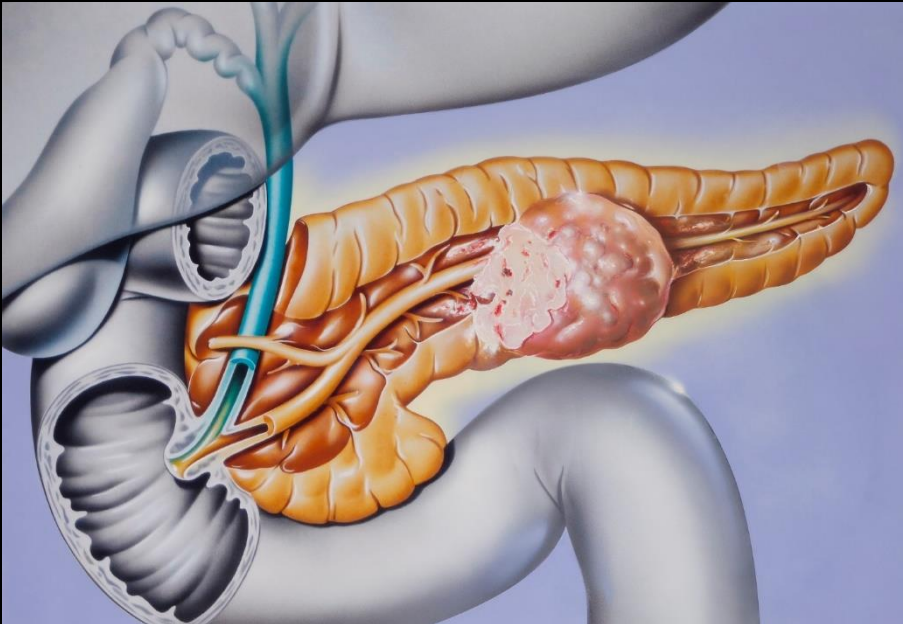
<sup>1</sup>Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark.

<sup>2</sup>Department of Gastrointestinal Surgery, Aarhus University Hospital, Aarhus, Denmark.



# Case 2 -75 years

- Samme tumor and CT
- Patienten er operabel
- Tumor er resektabel





# Will surgery improve his outcome?



# Survival Benefit of Primary Tumor Resection Among Elderly Patients with Pancreatic Neuroendocrine Tumors

[Junya Toyoda](#), [Kota Sahara](#), [Diamantis I. Tsilimigras](#), [Kentaro Miyake](#), [Yasuhiro Yabushita](#), [Yuki Homma](#), [Takafumi Kumamoto](#), [Ryusei Matsuyama](#) & [Timothy M. Pawlik](#) 

*World Journal of Surgery* **45**, 3643–3651 (2021) | [Cite this article](#)

- Studie med 2319 patients > 70 years
- 433 i hver gruppe > 70 (propensity score matched)
- 5 års overlevelsen 53% vs 37 % til fordel for kirurgi
- Ingen fordel på overlevelse > 80

# Case 3


- 55 årig mand .
- 18 mm forandring - G1 NET
- Tumor er resektabel. Patienten er operabel
- Har han gavn af operation?



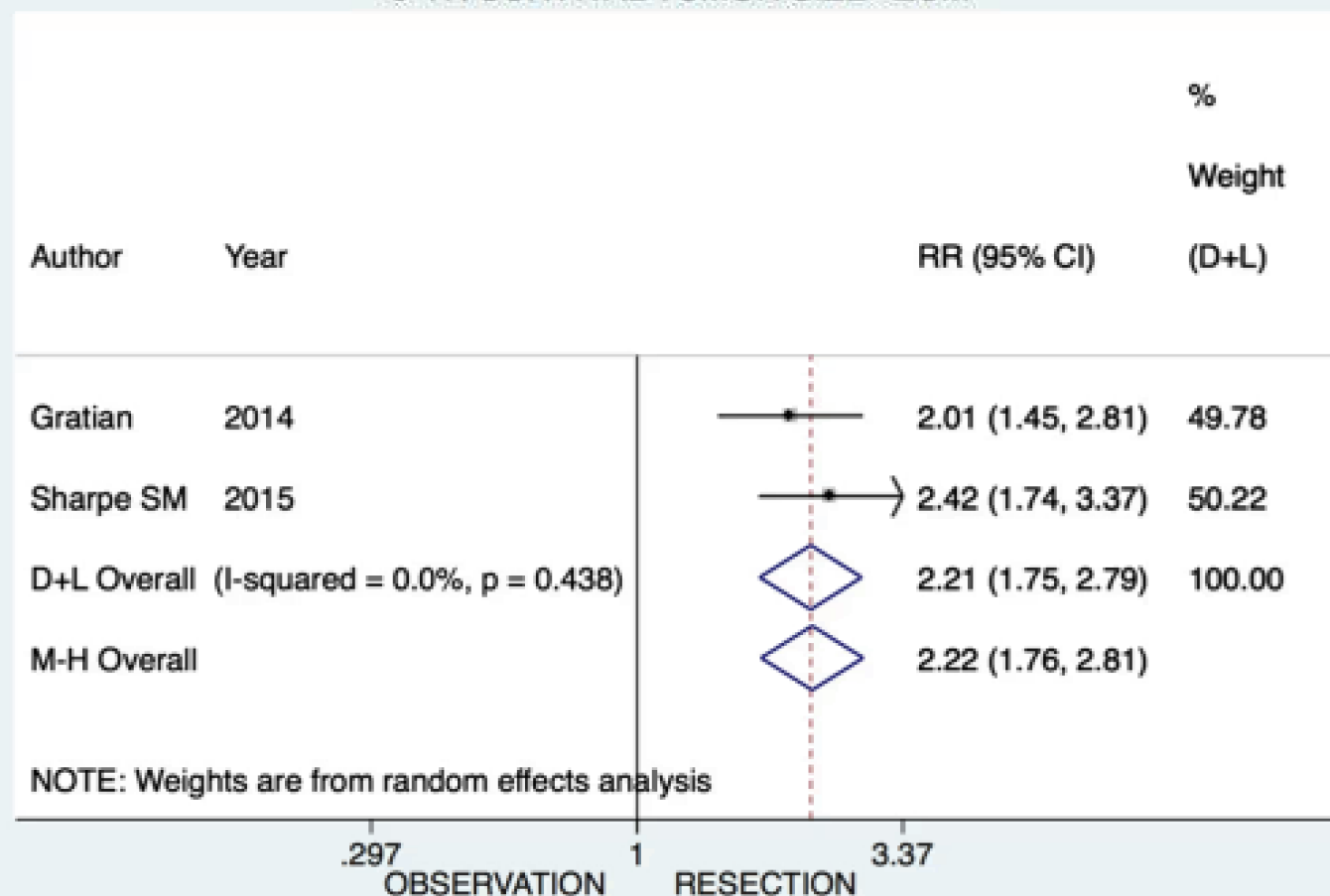
Will surgery improve his outcome?



# Pancreatic Neuroendocrine Tumors (panNETs): Analysis of Overall Survival of Nonsurgical Management Versus Surgical Resection

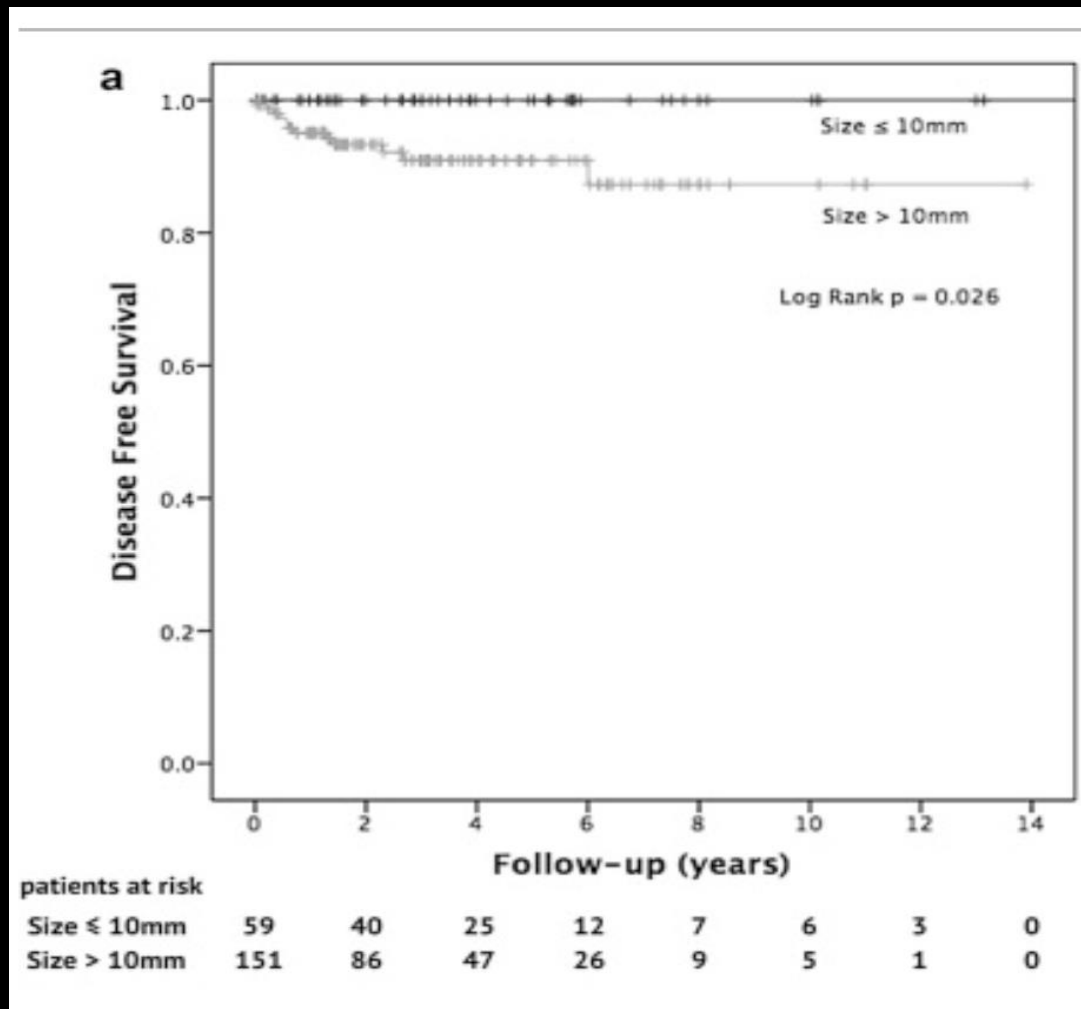
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## 5-YR SURVIVAL TUMOR SIZE <2CM





# The 5-year disease-free survival is excellent after surgery on tumors < 2cm



Ref: Sallinen et al 2018

# Lang tids overlevelse efter kirurgi er fantastisk

- Men hvordan går det dem der ikke opereres.
- 2 oversigtsartikler
- 22% voksede i follow-up perioden
  - Ref: Sallinen and Partelli 2017

# Predicting Progression, Recurrence, and Survival in Pancreatic Neuroendocrine Tumors: A Single Center Analysis of 174 Patients

*Sara Krogh<sup>1</sup>, Henning Grønbaek<sup>1</sup>, Anders Riegels Knudsen<sup>2</sup>, Peter Kissmeyer-Nielsen<sup>2</sup>, Nynne Emilie Hummelshøj<sup>1</sup> and Gitte Dam<sup>1\*</sup>*

*<sup>1</sup> Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark, <sup>2</sup> Department of Gastrointestinal Surgery, Aarhus University Hospital, Aarhus, Denmark*



## **Predicting Progression, Recurrence, and Survival in Pancreatic Neuroendocrine Tumors: A Single Center Analysis of 174 Patients**

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<sup>1</sup>Department of Hepatology and Gastroenterology, Aarhus University Hospital, Aarhus, Denmark.

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# Tumors $\leq 2$ cm

- 3% af de opererede tumores  $\leq 2$  cm fik tilbagefald
- 28 patienter blev fulgt med “watch and wait” strategi.
- 1 patient oplevede vækst af tumor.

# Case 3

- 55 årig mand .
- 18 mm forandring - G1
- Aktiv overvågning





# **ENETS Consensus Guidelines for the Standards of Care in Neuroendocrine Tumours: Surgery for Small Intestinal and Pancreatic Neuroendocrine Tumours**

Partelli et al. Neuroendocrinology 2017

- European Neuroendocrine Tumor Society (ENETS) guidelines recommend a watchful strategy for asymptomatic NF-PanNEN <2 cm of diameter.

Aim of the ASPEN and PANDORA study is to evaluate the optimal management of asymptomatic NF-PanNEN  $\leq 2$  cm comparing active surveillance and surgery.

Observational studies- but prospective

## Management of Asymptomatic Sporadic Nonfunctioning Pancreatic Neuroendocrine Neoplasms (ASPEN) $\leq 2$ cm: Study Protocol for a Prospective Observational Study

Multicenter Study > Br J Surg. 2021 Aug 19;108(8):888-891. doi: 10.1093/bjs/znab088.

### Watchful waiting for small non-functional pancreatic neuroendocrine tumours: nationwide prospective cohort study (PANDORA)

C M Heidsma <sup>1</sup>, A F Engelsman <sup>2</sup>, S van Dieren <sup>1</sup>, M W J Stommel <sup>3</sup>, I de Hingh <sup>4</sup>, M Vriens <sup>5</sup>, L Hol <sup>6</sup>, S Festen <sup>7</sup>, L Mekenkamp <sup>8</sup>, F J H Hoogwater <sup>9</sup>, F Daams <sup>2</sup>, H-J Klümpen <sup>10</sup>, M G Besselink <sup>1</sup>, C H van Eijck <sup>11</sup>, E J Nieveen van Dijkum <sup>1</sup>

# Take home messages

- Tumor  $> 2$  cm tilbydes resektion
- Tumor  $\leq 2$  cm. Overvågning
- Det er sikkert med en periode med watchful waiting med ny skanning og derefter evaluering. Man kan sendes til kirurgerne senere
- Fordele, ulemper og langtidsbivirkninger efter kirurgi må opvejes.