

# Karotisstenos

Per Wangefelt



Falun 221208

---

---

---

---

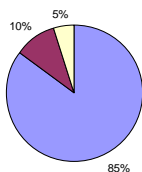
---

---

---

---

# Stroke



- Hjärninfarkt
- Intracerebralt hematom
- Subaraknoidalblödning

Tredje vanligaste dödsorsaken  
Dyraste sjukdomen




---

---

---

---

---

---

---

---

# Hjärninfarkt



- ICA/MCA: 25%
- Lakunära: 25%
- Kardiell embolisering: 20%
- Ovanliga: 5%
- Okänt, trots utredn: 25%

10-15% av emboliska stroke pga tid asymtomatisk  
ICA stenosis > 50%

Flaherty Neuroepidemiology 2013




---

---

---

---

---

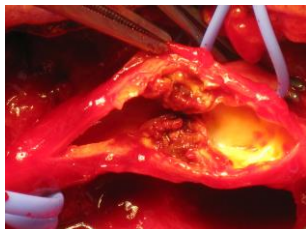
---

---

---

## Etiologi

- Atheroskleros
  - Plaqueruptur
  - Trombpålagring
  - Embolisering




---

---

---

---

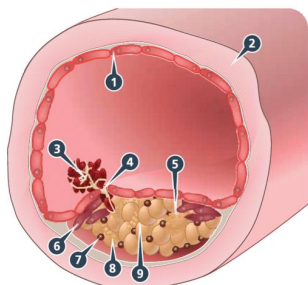
---

---

---

---

- 1 Endothelium
- 2 Vessel wall
- 3 Thrombus
- 4 Rupture of plaque
- 5 Foam cell
- 6 Smooth muscle cell
- 7 Tissue factor
- 8 Cholesterol
- 9 Necrotic core




---

---

---

---

---

---

---

---

## Carotis symptom



- Ipsilateralt;
  - amaurosis fugax
- Kontralateralt;
  - motoriska-sensoriska bortfall
- Dominant hemisfär;
  - afasi
- **NEUROLOGBEDÖMNING!**

---

---

---

---

---

---

---

---

## TIA/minor stroke



- Varningssignal för stroke
- 5 % får stroke inom 48 timmar och 11 % inom 14 dagar
- Fördröjning av operation i 2 veckor halverar vinsten (86% op inom 2 v, Sverige 2020)
- "Tid är hjärna"

Johansson Int J Stroke 2012




---

---

---

---

---

---

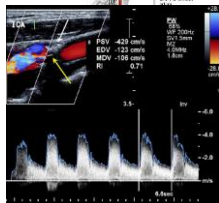
---

---

## Utredning



- Duplex
  - stenogradering genom hastighetsmätning
- CT/MR angio halskär
  - om oklarhet vid duplex
  - ocklusion?
- Uteslut kardiell embolikälla




---

---

---

---

---

---

---

---

## Symtomatisk karotisstenos



- Kirurgi förebygger stroke, visat i flera stora RCT's
- >70% stenosis, NNT 6 för att förebygga stroke eller död på 5 år
- 50-69%, NNT 13
- <50%, sämre utfall med kirurgi

ECST, Lancet 1998  
NASCET, NEJM.1998




---

---

---

---

---

---

---

---

## Symtomatisk karotisstenos



- CEA rekommenderas om;
  - stenosgrad 50-99%
  - patient skaplig förväntad överlevnad, ingen övre åldergräns
  - låg peroperativ strokeknivå (3,1% Sverige 2020)




---

---

---

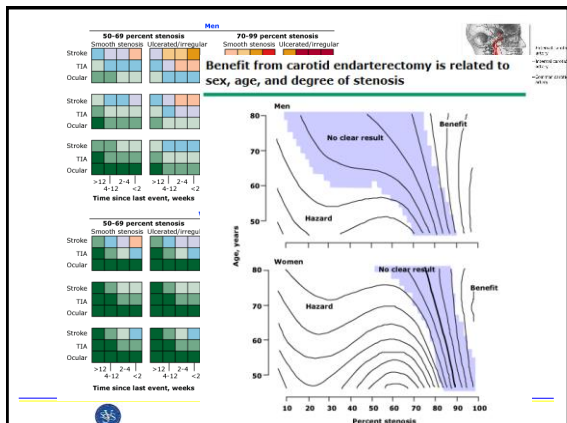
---

---

---

---

---




---

---

---

---

---

---

---

---

## Asymtomatisk karotisstenos



- Upptäcks vid duplex;
  - symtomgivande stenos kontralaterala sidan
  - blåsljud
  - screening
- Oenighet om operation eller enbart bästa medicinska behandling trots flera stora RCT
- Operation vanligt USA södra Europa
- Sverige restriktiv hållning, men ökande (från låga nivåer)




---

---

---

---

---

---

---

---

## CEA - carotid endarterektomi



- Narkos eller lokalbedövning
- Tillräcklig kollateralcirkulation,shuntbehov?
  - om narkos, stumptryck + NIRS
  - om lokalbedövning, provavstängning
- Patch;
  - minskad ocklusionsrisk
  - minskad restenosfrekvens
- Strokerisk 30 d 3-6% (Sverige 2020: 3,1%)




---

---

---

---

---

---

---

---

## CAS - Carotid artery stenting



- Rekommenderas;
  - inom ramen för RCT's
  - restenos efter tidigare karotiskirurgi
  - karotis stenosis i strålbehandlat område




---

---

---

---

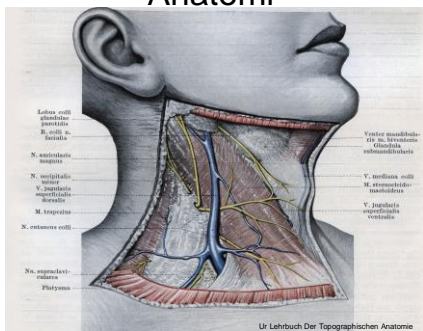
---

---

---

---

## Anatomi



Ur Lehrbuch Der Topographischen Anatomie




---

---

---

---

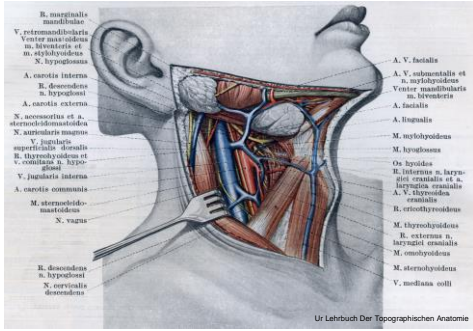
---

---

---

---

# Anatomi



Ur Lehrbuch Der Topographischen Anatomie



---

---

---

---

---

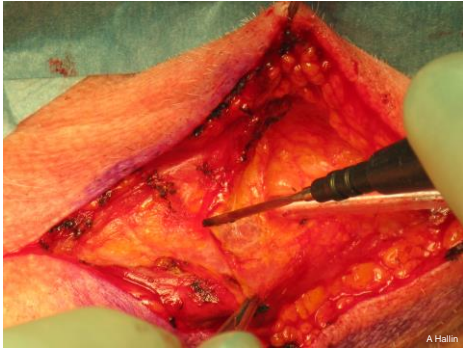
---

---

---

---

---



A. Hallin



Datum

---

---

---

---

---

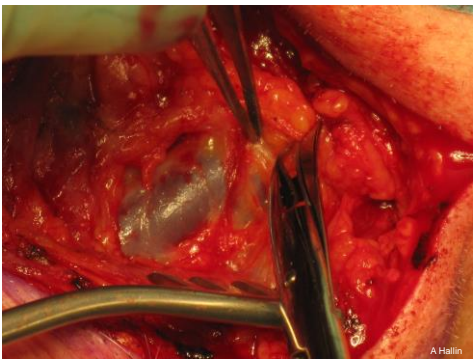
---

---

---

---

---



A. Hallin



Datum

---

---

---

---

---

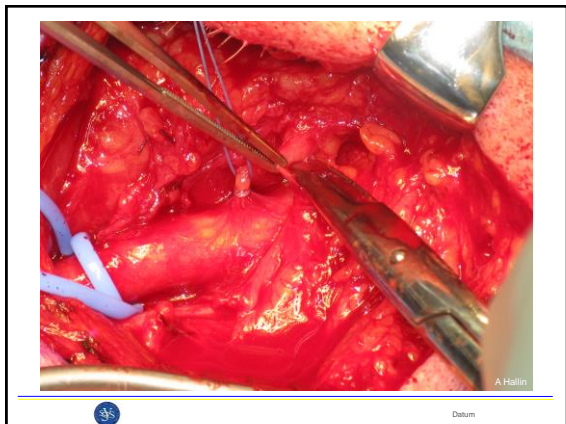
---

---

---

---

---



---

---

---

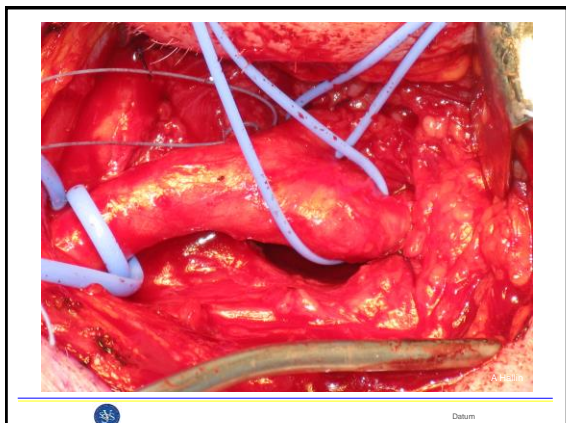
---

---

---

---

---



---

---

---

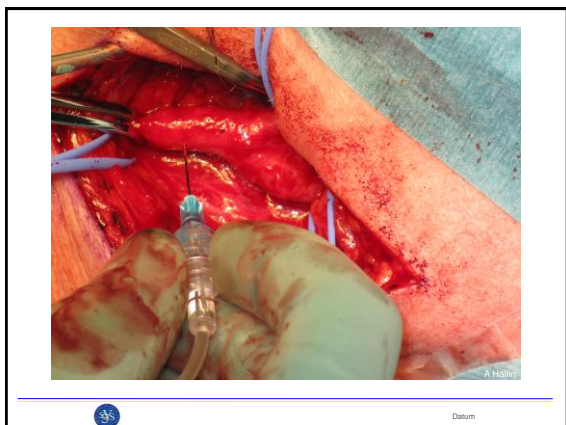
---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

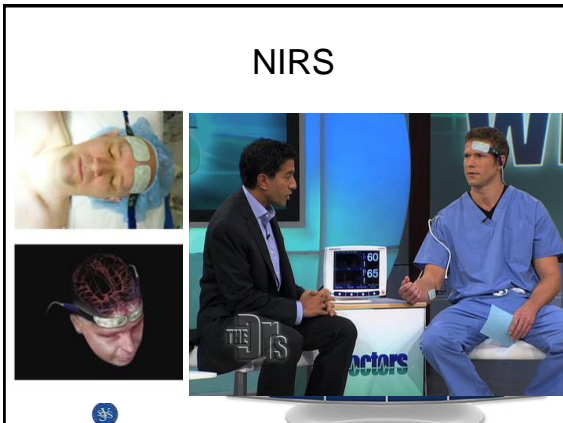
---

---

---

---

---



---

---

---

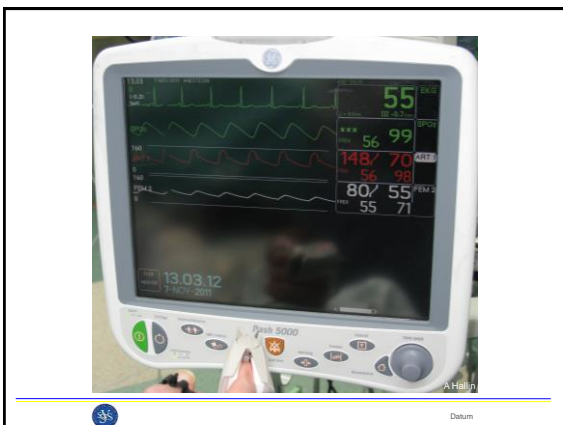
---

---

---

---

---



---

---

---

---

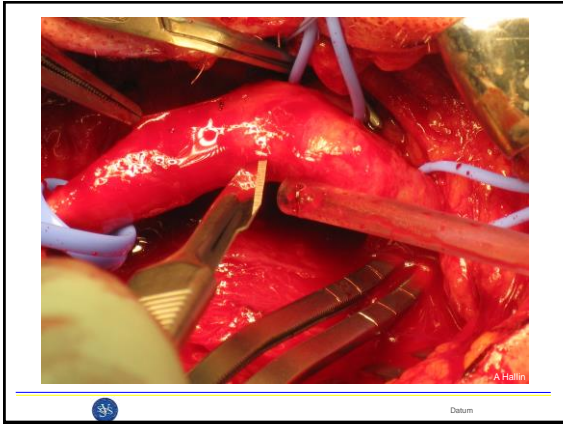
---

---

---

---





---

---

---

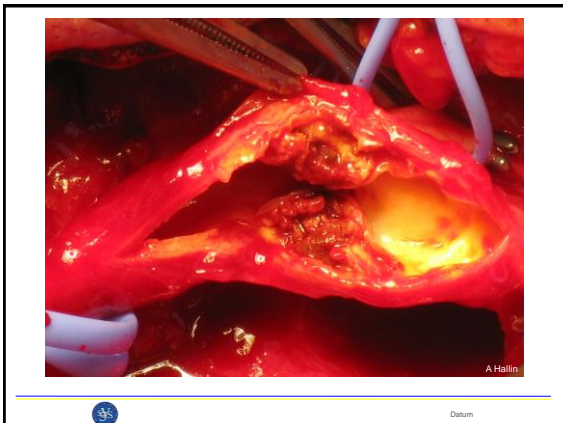
---

---

---

---

---



---

---

---

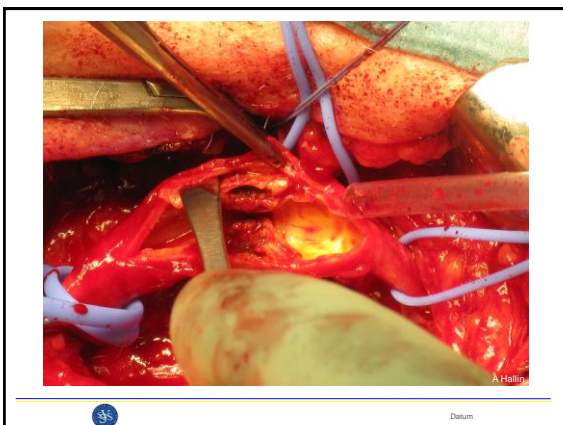
---

---

---

---

---



---

---

---

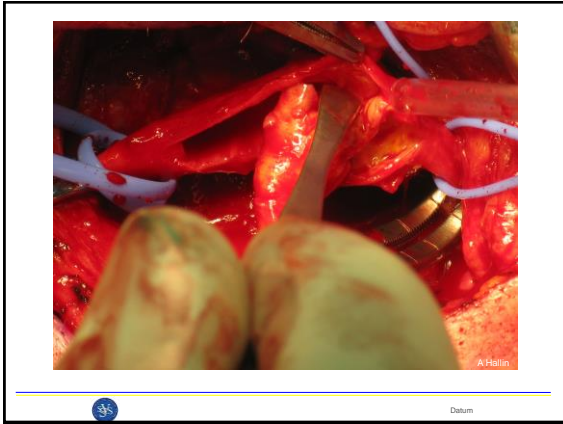
---

---

---

---

---



---

---

---

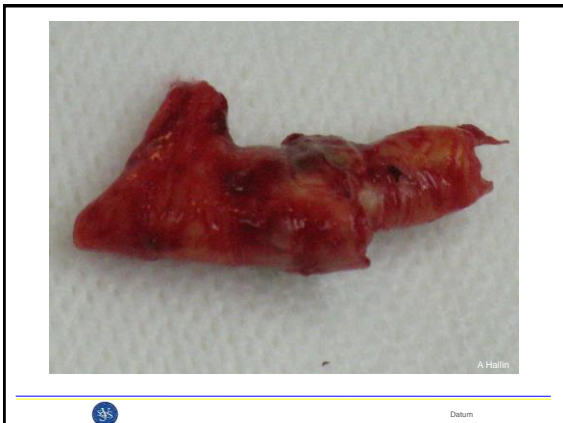
---

---

---

---

---



---

---

---

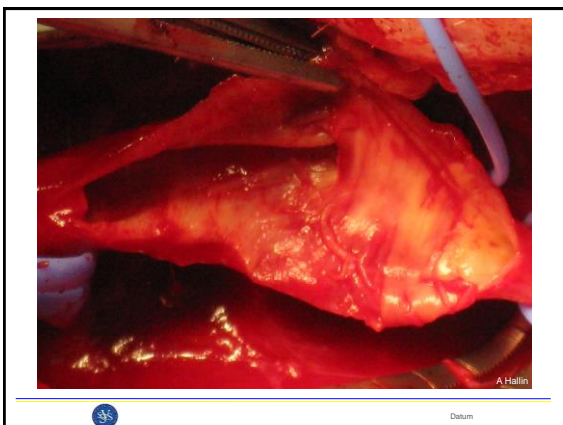
---

---

---

---

---



---

---

---

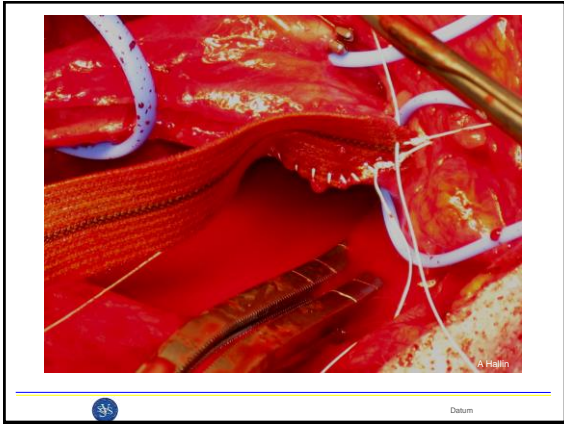
---

---

---

---

---



---

---

---

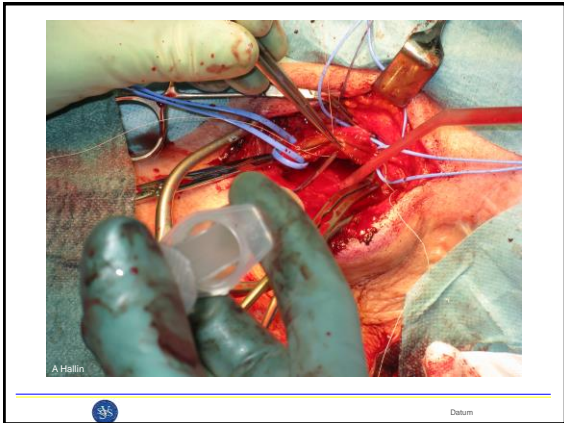
---

---

---

---

---



---

---

---

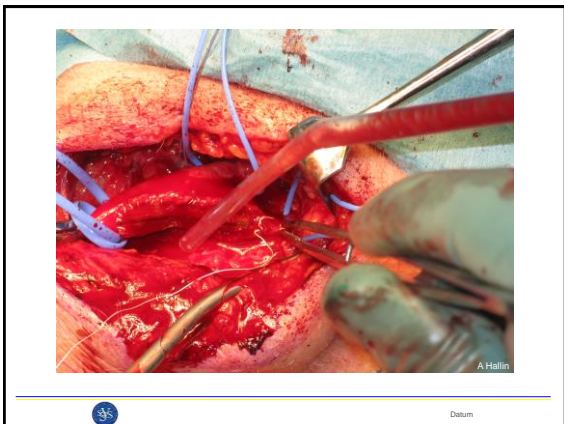
---

---

---

---

---



---

---

---

---

---

---

---

---



---

---

---

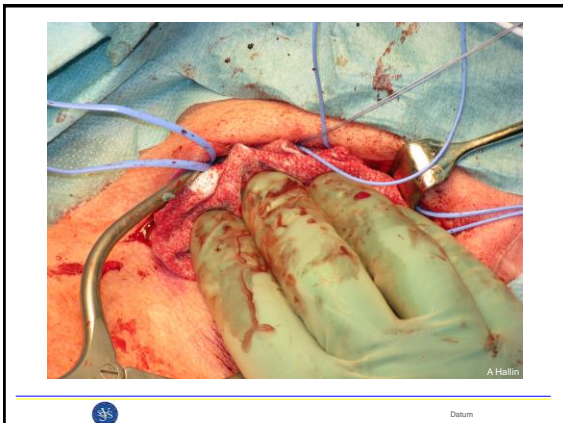
---

---

---

---

---



---

---

---

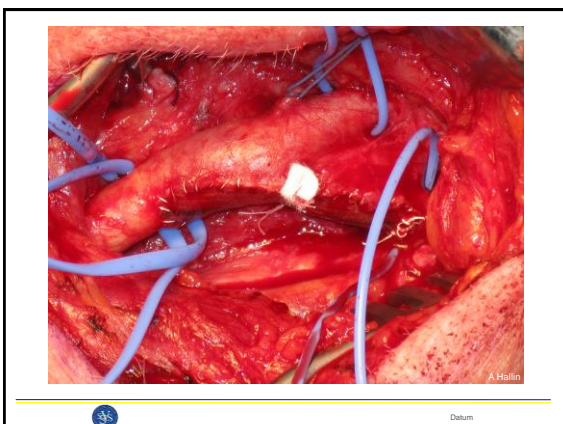
---

---

---

---

---



---

---

---

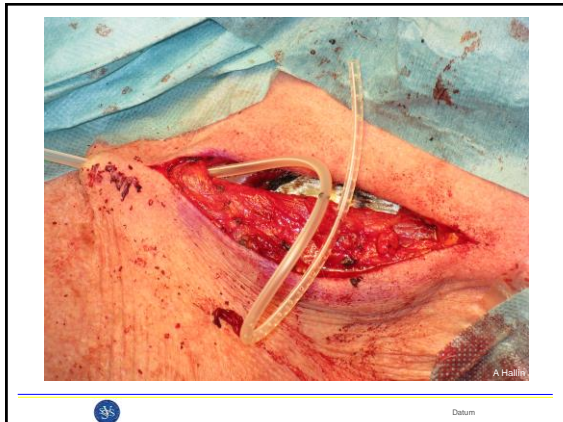
---

---

---

---

---




---



---



---



---



---




---





---

## Postoperativt



- Övervakningsavdelning första dygnet
- Blodtrycksgränser
- Nyttillkomna neurologiska symtom
  - ocklusion? akut reop?
- Expanderande hematom?
  - akut reop, svårintuberad – fiberintubation?
- Hyperperfusionssyndrom
  - högt BT, hjärnblödning

---



---



---



---



---



---



---