

Grand Rounds

Rigshospitalet

rigshospitalet.dk/grandrounds



Nyrettransplantation

Lav- og højteknologiske løsninger på aktuelle udfordringer

- Søren Schwartz Sørensen, professor, Afdeling for Nyre- og Hormonsygdomme, Rigshospitalet
- Morten Buus Jørgensen, afdelingslæge, Afdeling for Nyre- og Hormonsygdomme, Rigshospitalet
- Ulla Brink Plagborg, transplantationskoordinator, Afdeling for Transplantation og Sygdomme i Fordøjelsessystemet, Rigshospitalet
- Andreas Røder, professor, Afdeling for Urinvejskirurgi, Rigshospitalet

Nyretransplantation – en tidslinje



Auto Tx hund
Hund til ged
Gris til menneske

Emerich Ullmann, Vienna



Vaskulær
Anastomose
teknik

Alexis Carrel, Lyon

Yuri Voronoy, Kherson, Ukraine



RAKT



1. matchrunde
Scandiatransplant
Kidney exchange
Program (STEP)

Nyretransplantation – en tidslinje



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6 Tx med
afdød donor

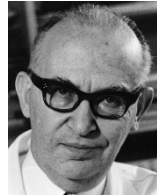
Yuri Voronoy, Kherson, Ukraine

Nyretransplantation – en tidslinje



Auto Tx hund
Hund til ged
Gris til menneske

Emerich Ullmann, Vienna



Tx med
levende donor

Jean Hamburger, Paris

Første vellykkede nyreTx
levende donor



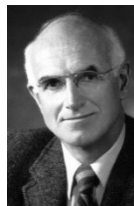
Vaskulær
Anastomose
teknik

Alexis Carrel, Lyon



6 Tx med
afdød donor

Yuri Voronoy, Kherson, Ukraine



Tx med
levende donor

Joseph Murray, Boston

Nyretransplantation med levende donor

Madame Renard



Marius Renard



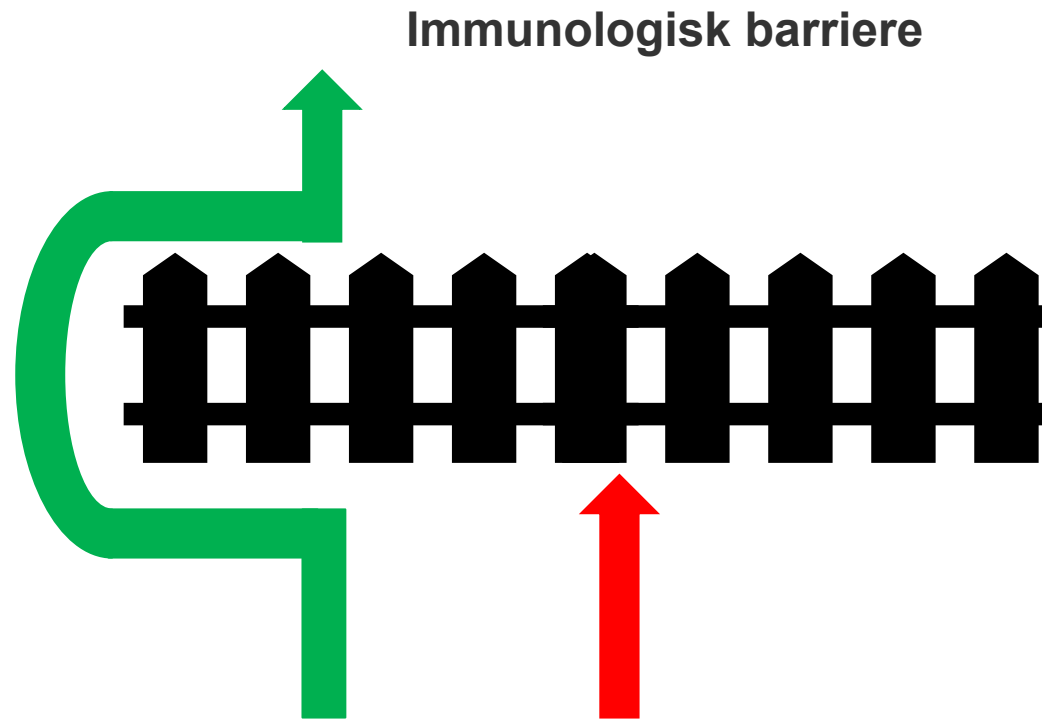
Paris Neckar 1952
Graft loss on Tx day 22

Richard and Ronald Herrick



Boston 1954
Recipient lived for 8 years

Forskelligt approach



Nyretransplantation – en tidslinje



Auto Tx hund
Hund til ged
Gris til menneske

Emerich Ullmann, Vienna



Tx med
levende donor

Jean Hamburger, Paris



1. Danske nyreTx, Århus

Første vellykkede nyreTx
levende donor



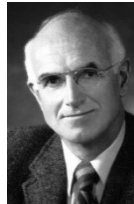
Vaskulær
Anastomose
teknik

Alexis Carrel, Lyon



6 Tx med
afdød donor

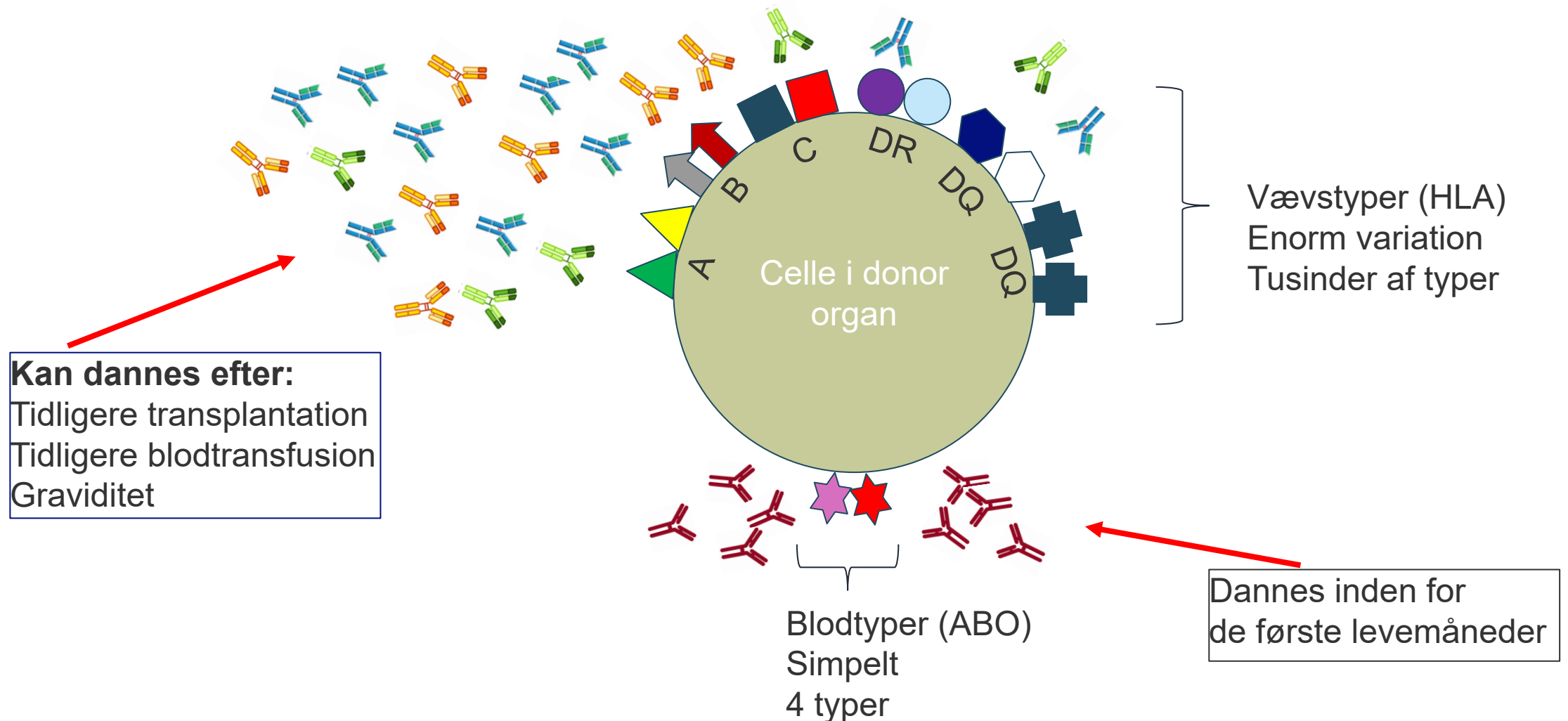
Yuri Voronoy, Kherson, Ukraine



Tx med
levende donor

Joseph Murray, Boston

Immunologiske barrierer – vævstyper og blodtyper

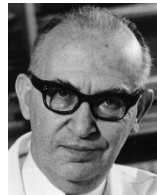


Nyretransplantation – en tidslinje



Auto Tx hund
Hund til ged
Gris til menneske

Emerich Ullmann, Vienna



Tx med
levende donor

Jean Hamburger, Paris



1. Danske nyreTx, Århus

Første vellykkede nyreTx
levende donor



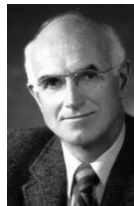
Vaskulær
Anastomose
teknik

Alexis Carrel, Lyon



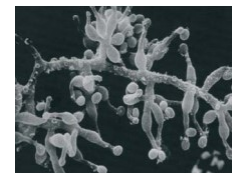
6 Tx med
afdød donor

Yuri Voronoy, Kherson, Ukraine



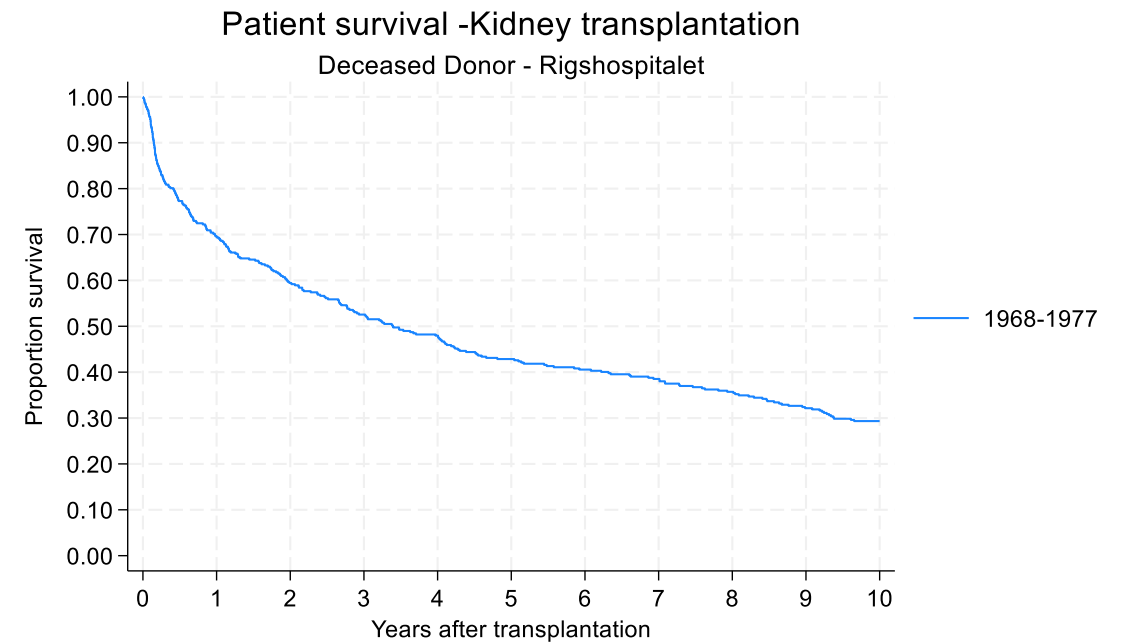
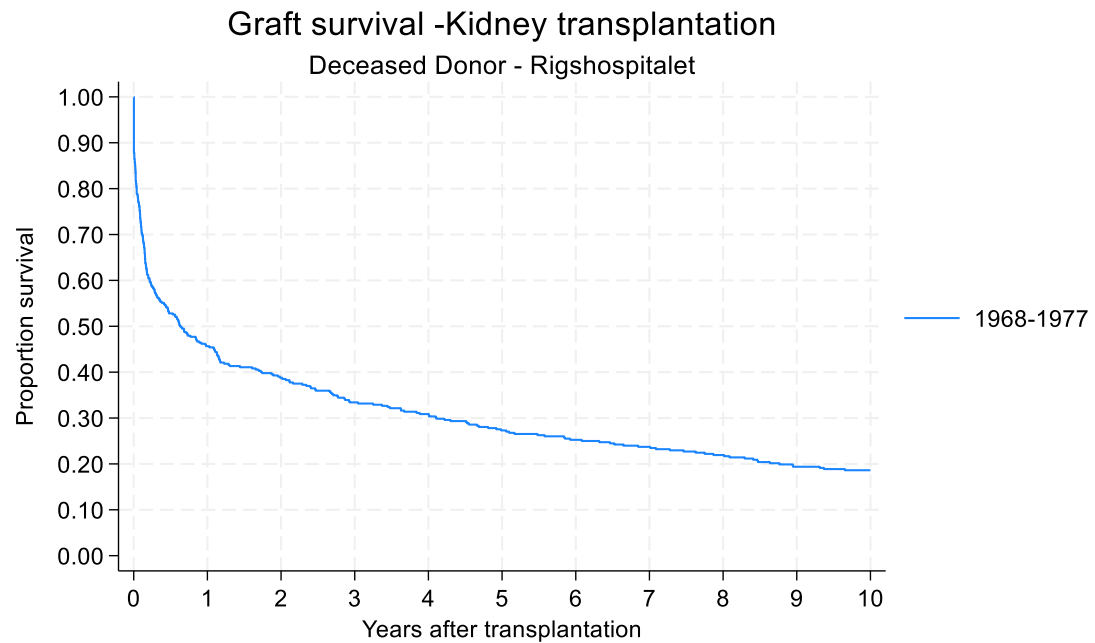
Tx med
levende donor

Joseph Murray, Boston

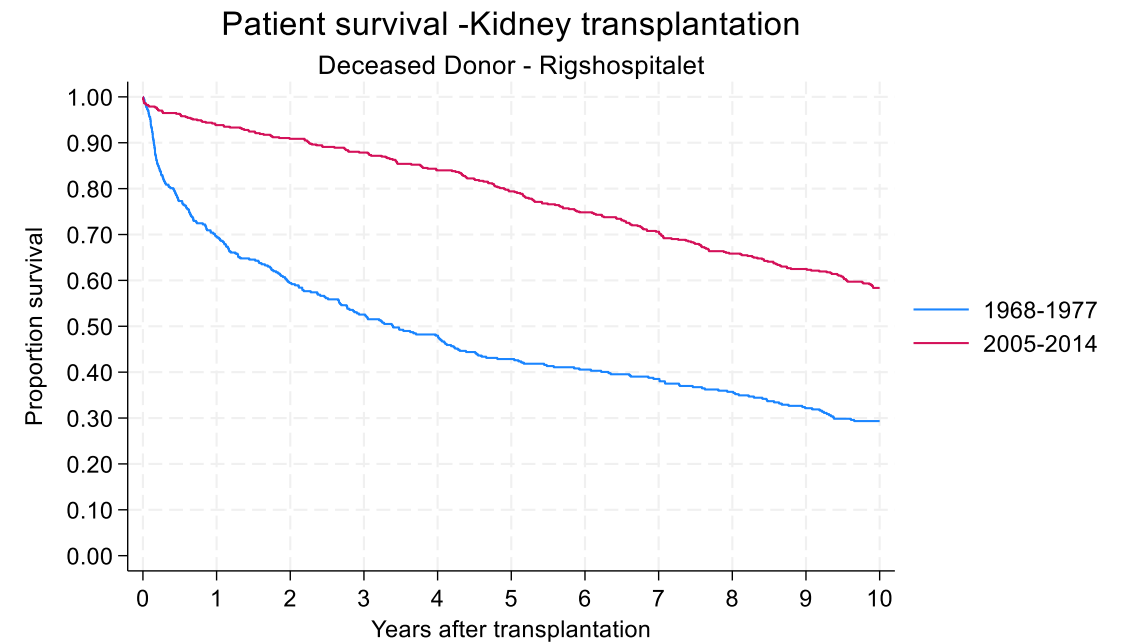
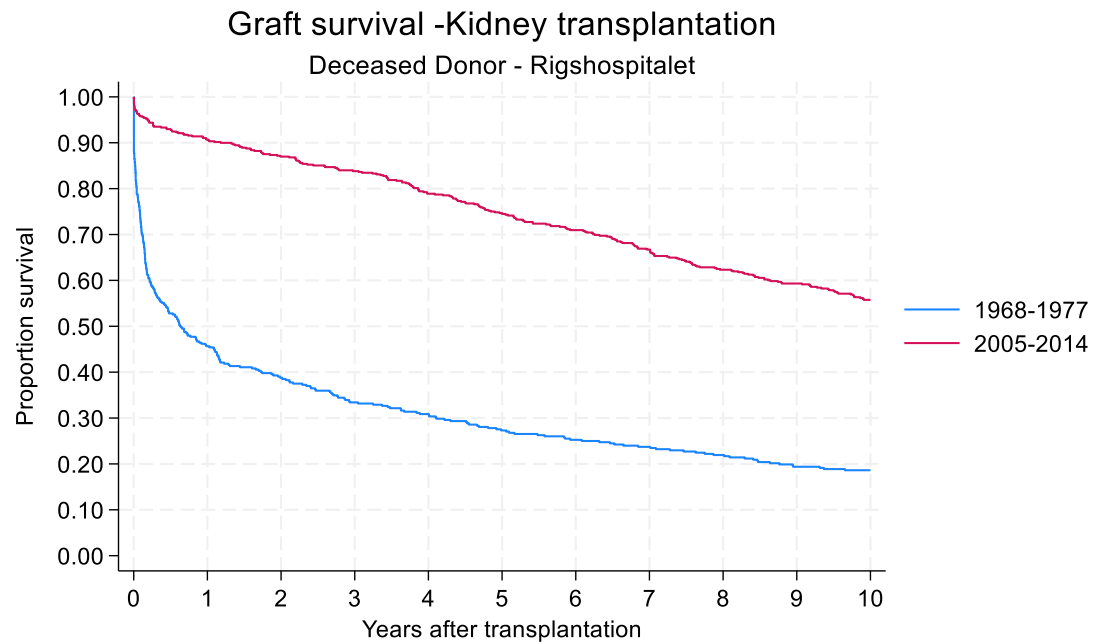


Cyclosporin

Resultater – mulighed for forbedring



Resultater – mulighed for forbedring



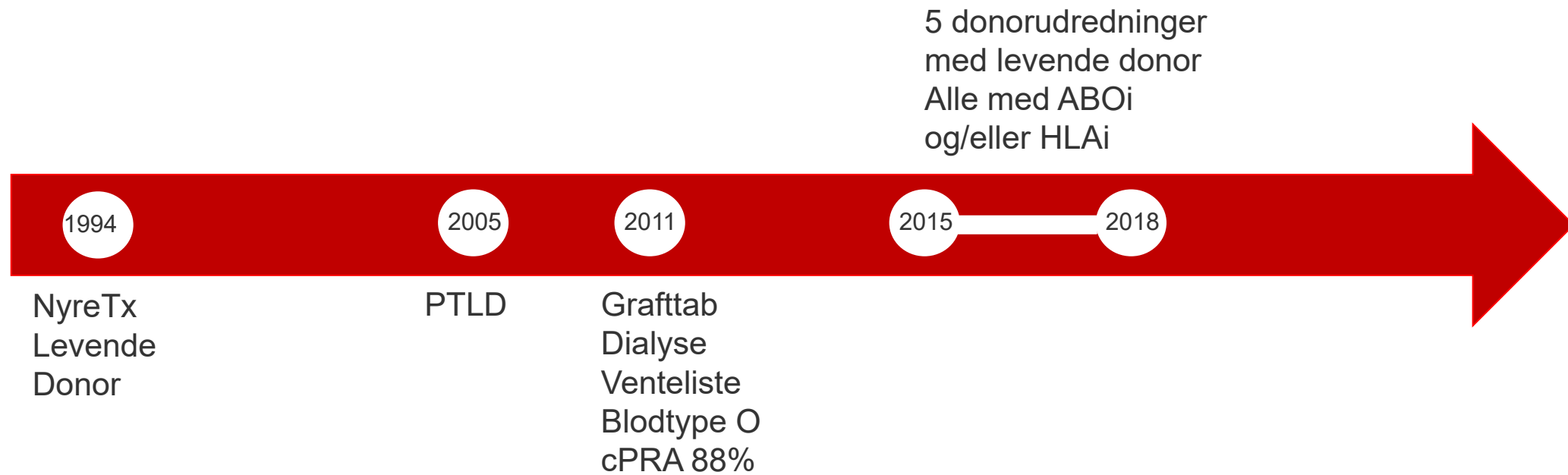
Nyretransplantation – centrale immunologiske dogmer

- Transplantation med vævstyp forskellig nyre kan gøres godt ved brug af almindelig immunosuppressiva

Men.....

- Transplantation mod præformerede antistoffer (HLA antistoffer, ABO antistoffer) kan i værste fald medføre hyperakut afstødning, i bedste fald oftest med suboptimalt resultat

En patientcase



Aktuelle case - immunologiske barrierer

HLA-antistoffer rettet mod donor
ABO-antistoffer rettet mod donor

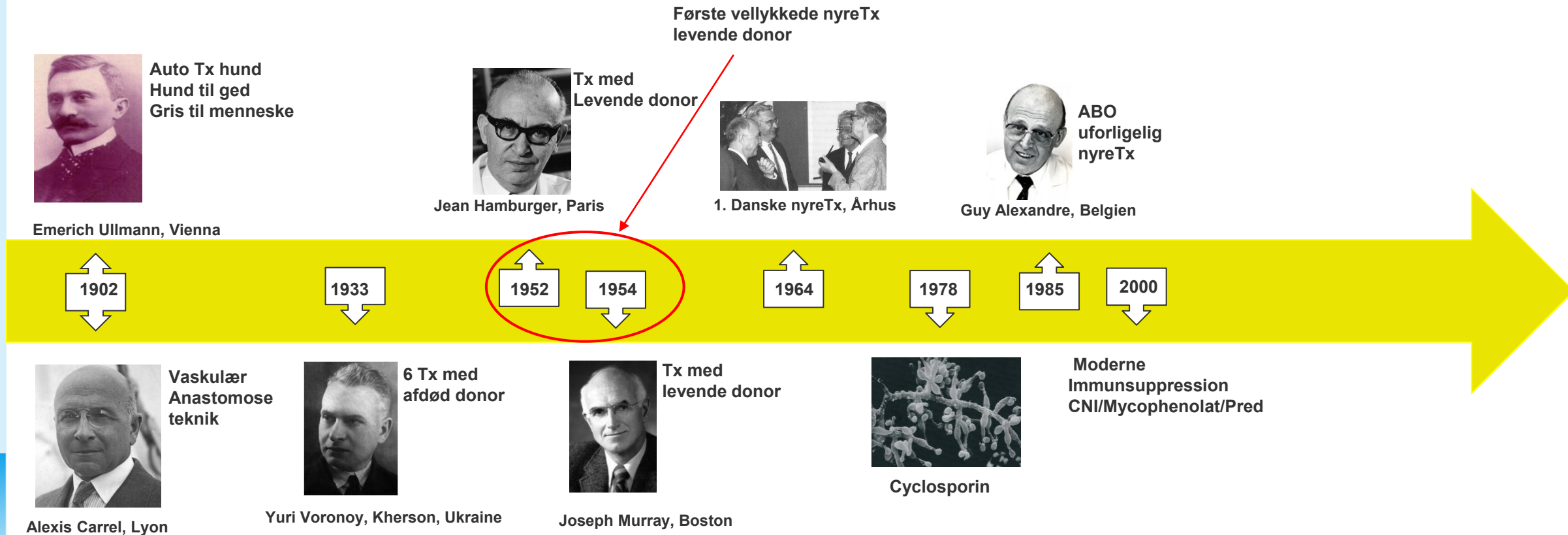


Muligheder for patienten

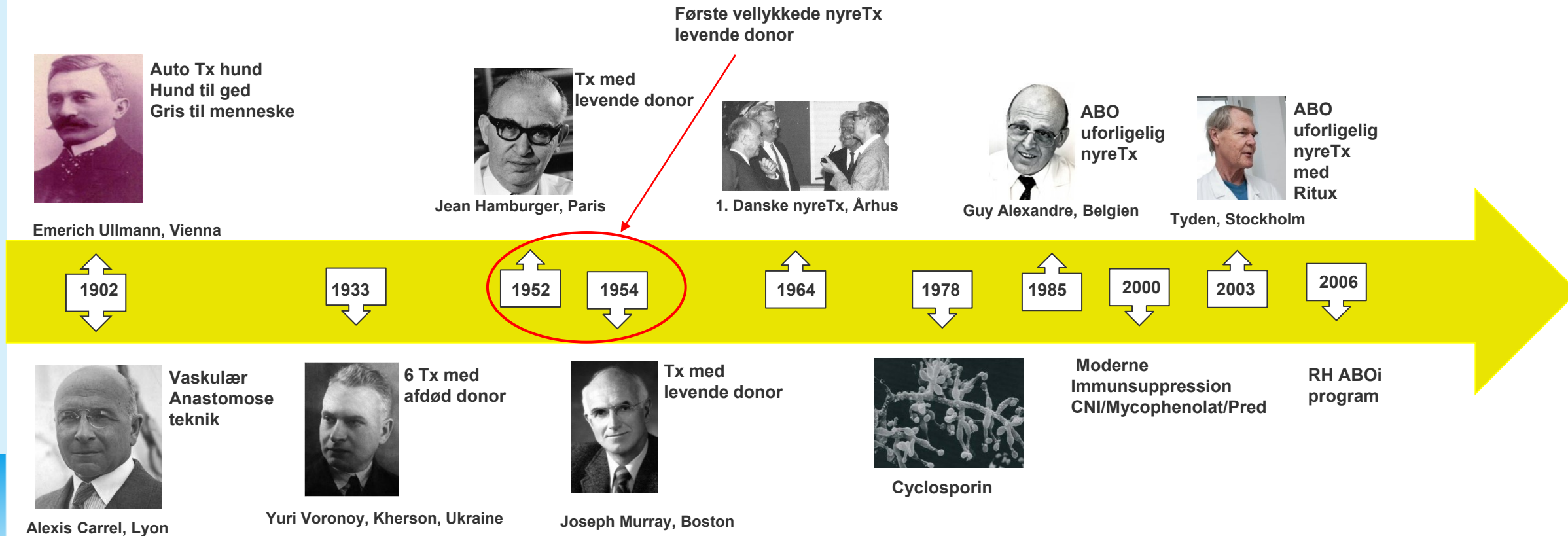
- Fortsætte med at vente på en nyre fra en afdød
- Forsøge at fjerne antistofferne
- Kunne man finde nogen i samme situation og så bytte nyre



Nyretransplantation – en tidslinje

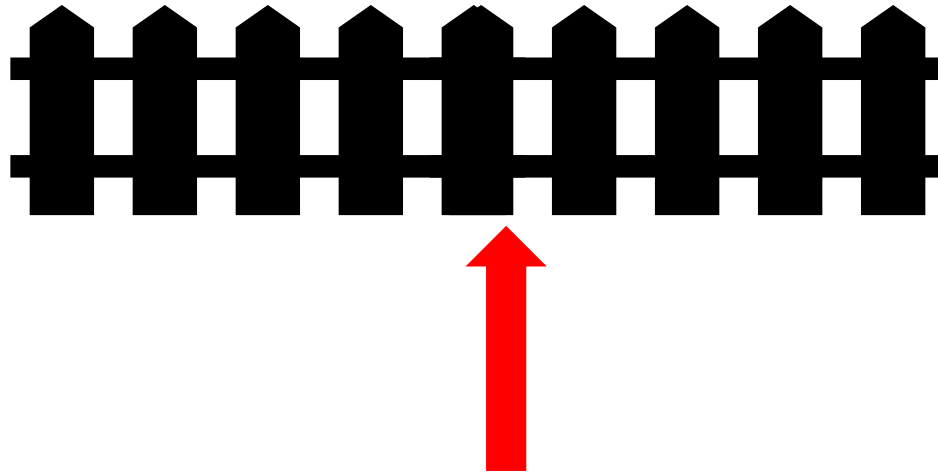


Nyretransplantation – en tidslinje



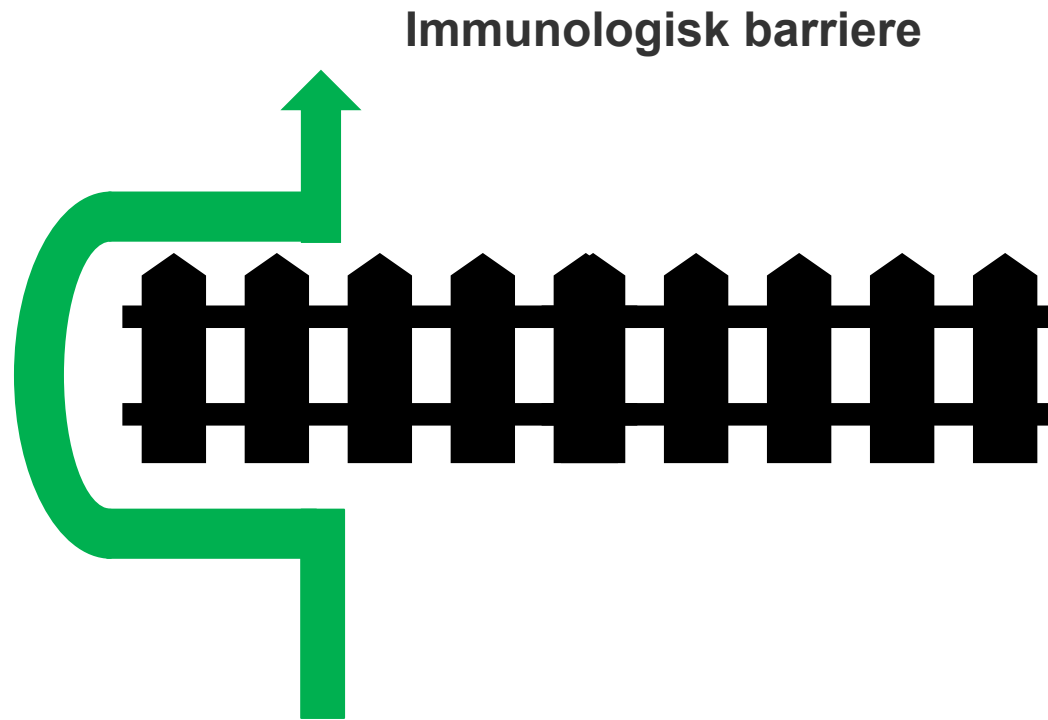
Forskelligt approach

Immunologisk barriere

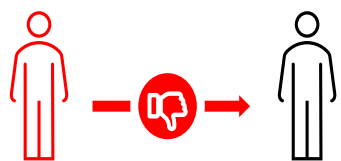
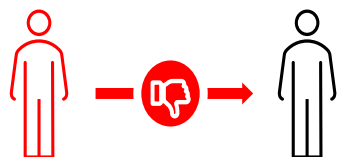


Blodtypeantistoffer (ABO) relativt lette at fjerne og kommer sjældent igen
Vævstypenatistoffer (HLA) ofte svære at fjerne og kommer ofte igen

Forskelligt approach



Nyrebytte



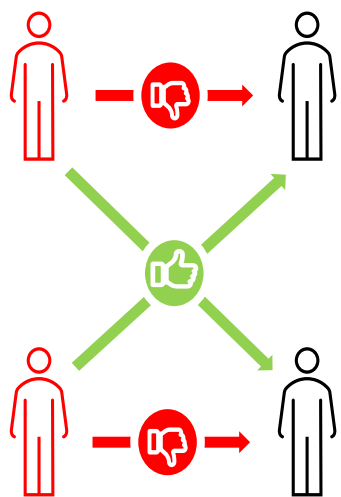
Levende donor



Modtager

Nyrebytte

Tovejs byt

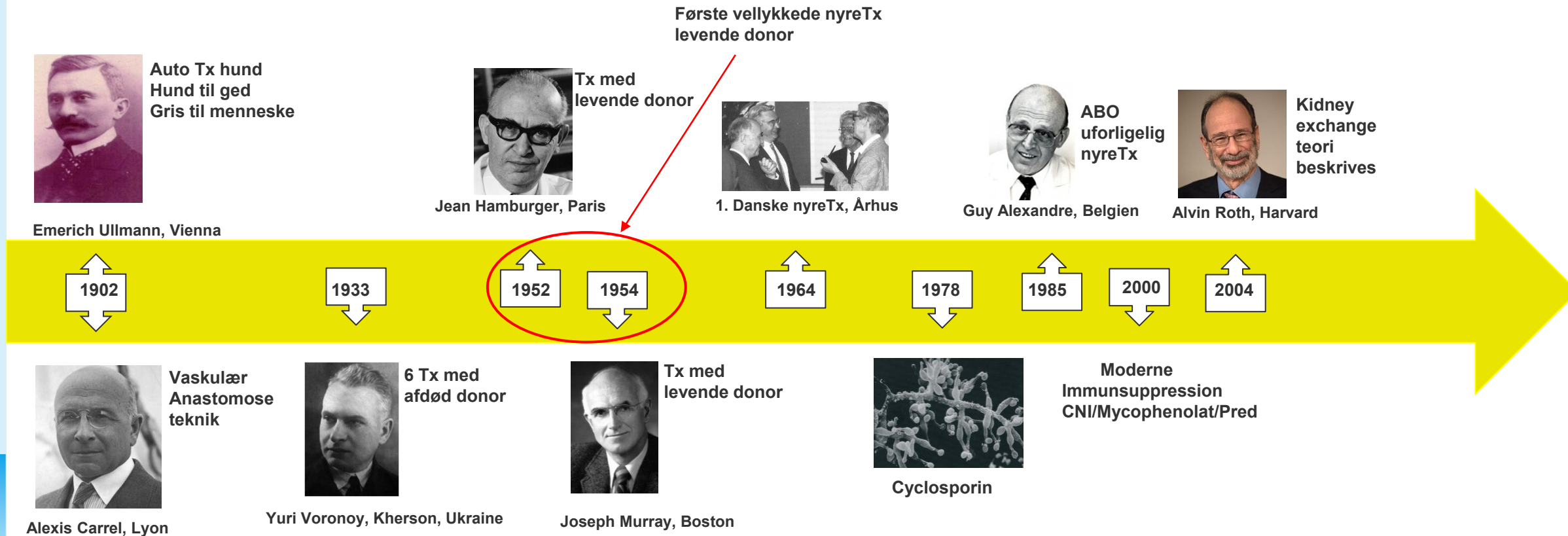


Levende donor



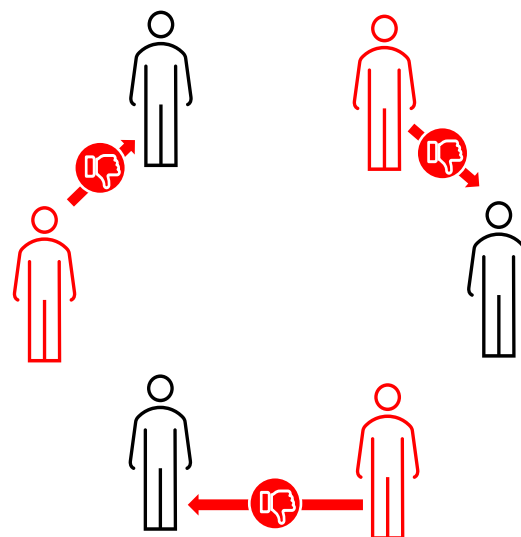
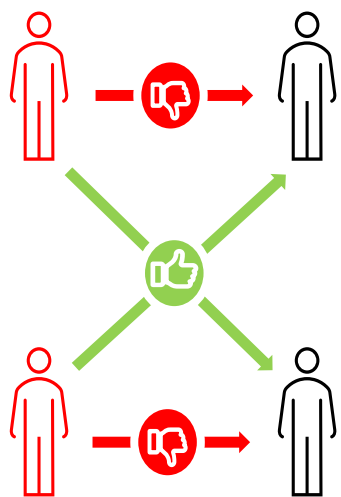
Modtager

Nyretransplantation – en tidslinje



Principperne bag nyrebytte

Tovejs byt



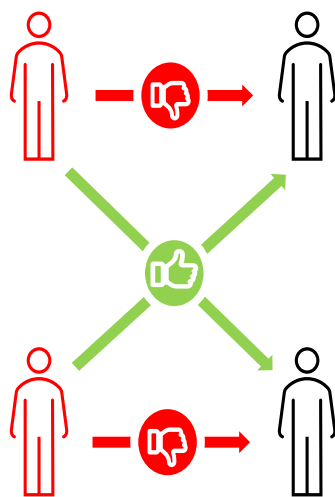
Levende donor



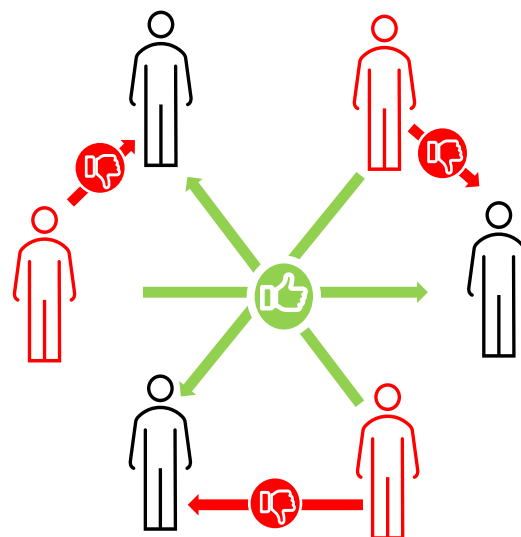
Modtager

Principperne bag nyrebytte

Tovejs byt



Trevejs byt



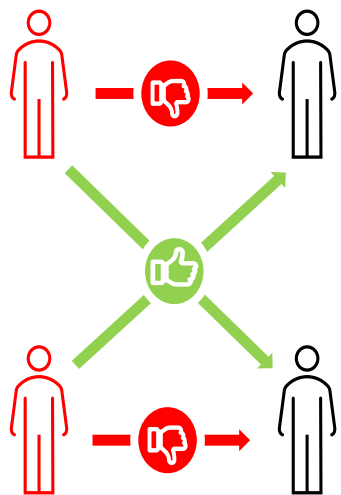
Levende donor



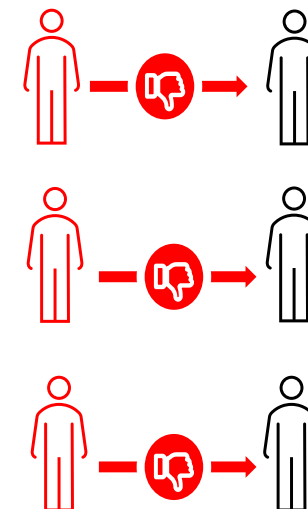
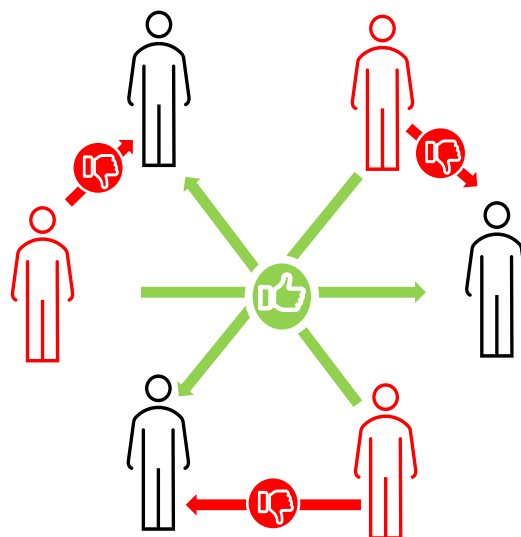
Modtager

Principperne bag nyrebytte

Tovejs byt



Trevejs byt



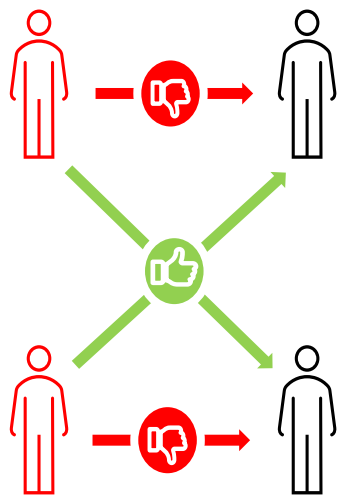
Levende donor



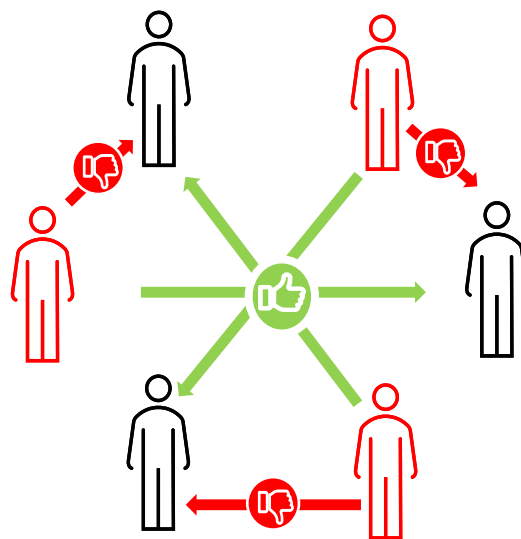
Modtager

Principperne bag nyrebytte

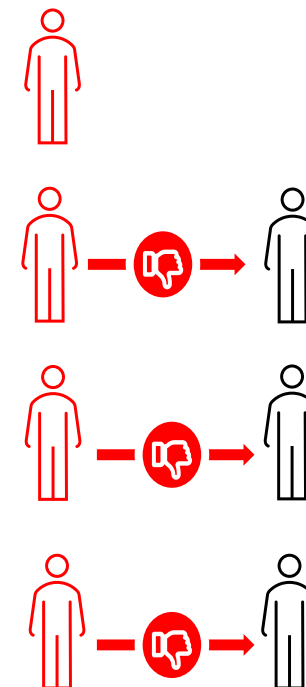
Tovejs byt



Trevejs byt



Anonym donor

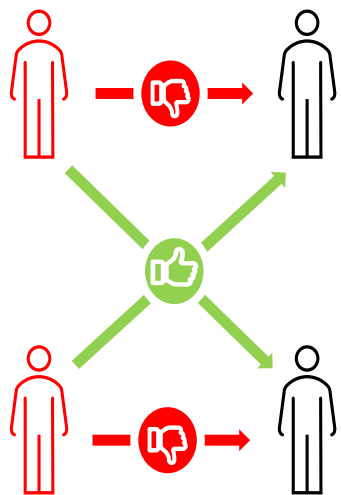


Levende donor

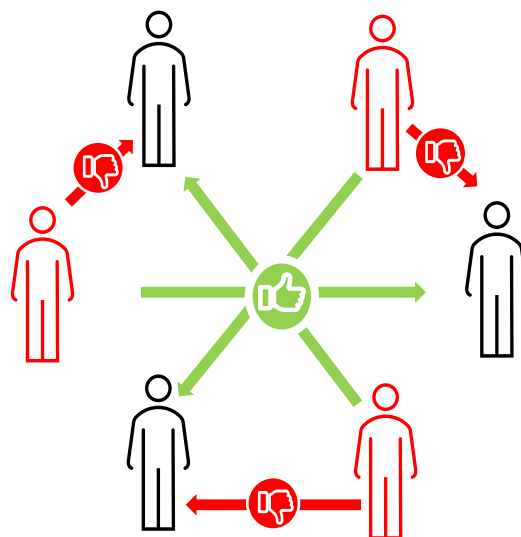
Modtager

Principperne bag nyrebytte

Tovejs byt

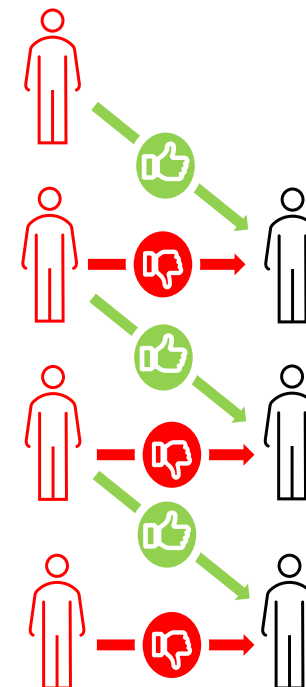


Trevejs byt



Kæde

Anonym donor



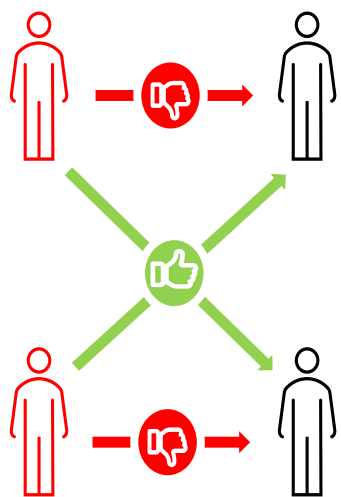
Levende donor



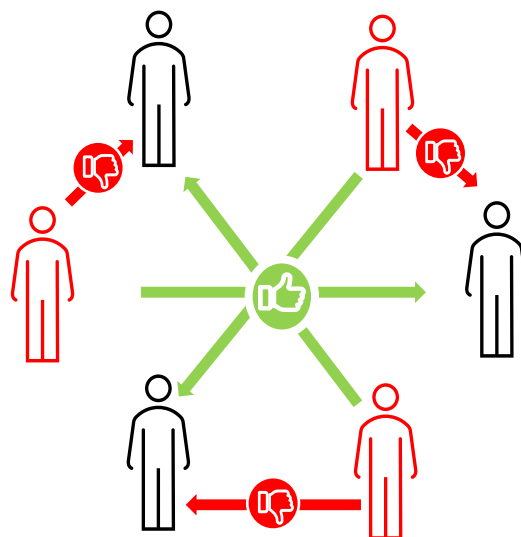
Modtager

Principperne bag nyrebytte

Tovejs byt

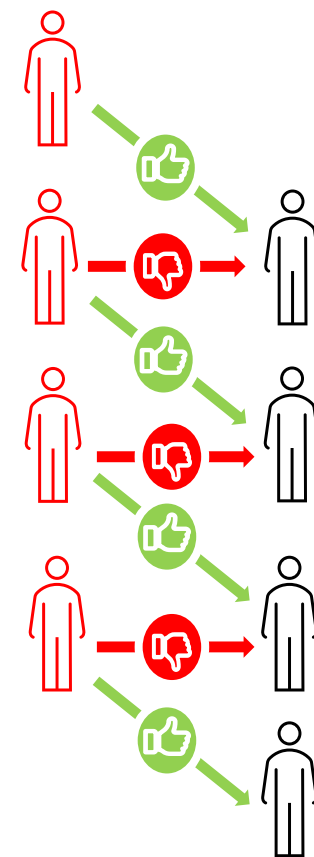


Trevejs byt



Kæde

Anonym donor



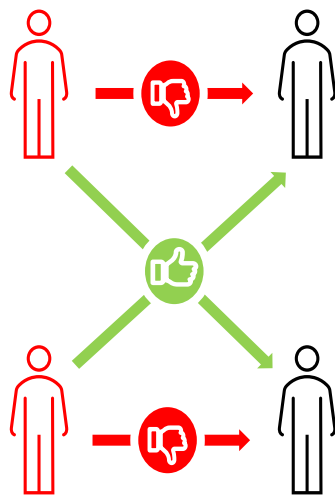
Levende donor

Modtager

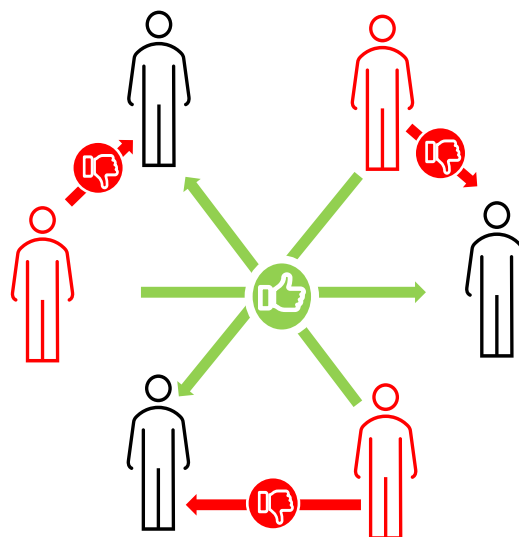
Patient på venteliste

Principperne bag nyrebytte

Tovejs byt

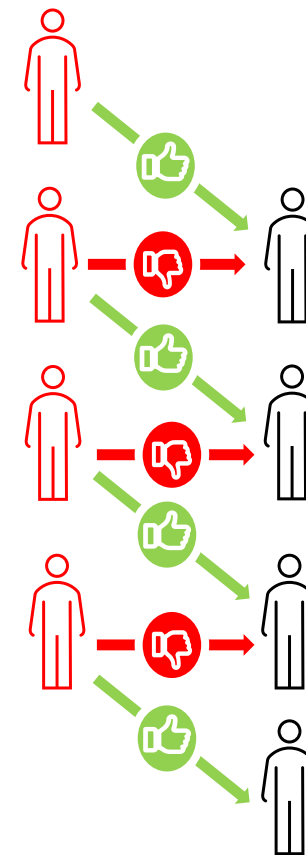


Trevejs byt



Kæde

Anonym donor



Simultane operationer



Levende donor



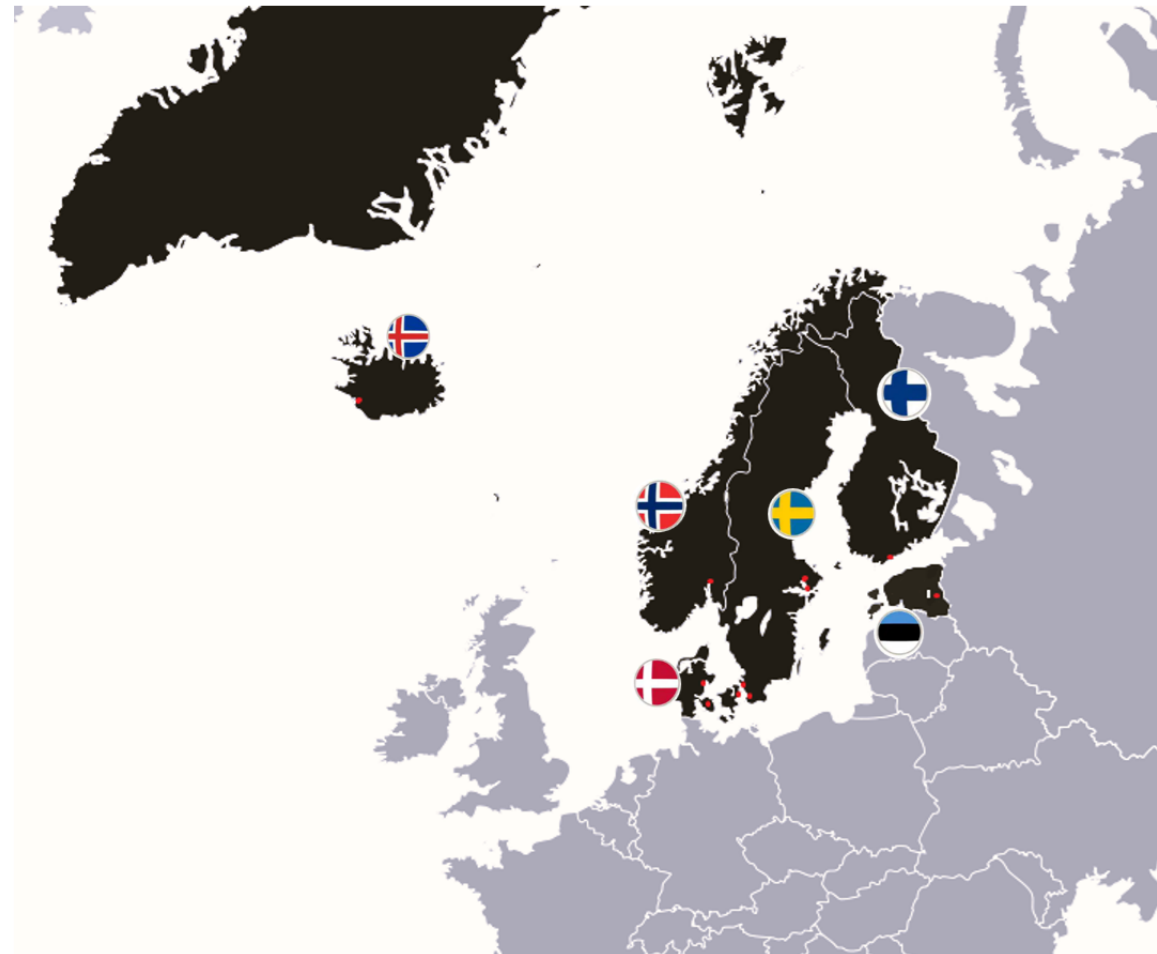
Modtager

Patient på venteliste

Scandiatriplant – en platform for nyrebytte?

Member hospitals

-  Aarhus
-  Copenhagen
-  Gothenburg
-  Helsinki
-  Odense
-  Oslo
-  Reykjavik
-  Skåne
-  Stockholm
-  Tartu
-  Uppsala



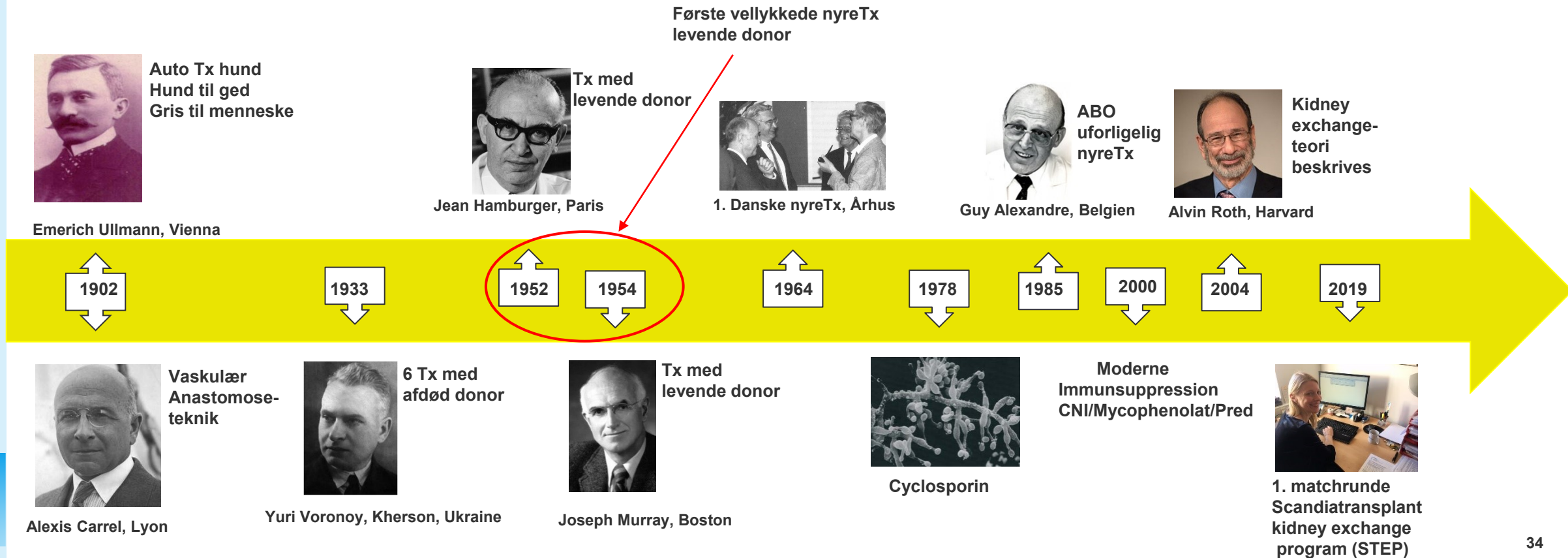
Et nordisk exchange-program – det må da være let?

- Tilpasning af exchange-algoritmen til lokale forhold
- Princip – nyren flyttes, ikke donor
 - Donorkompensation
- Flytning af data
 - GDPR



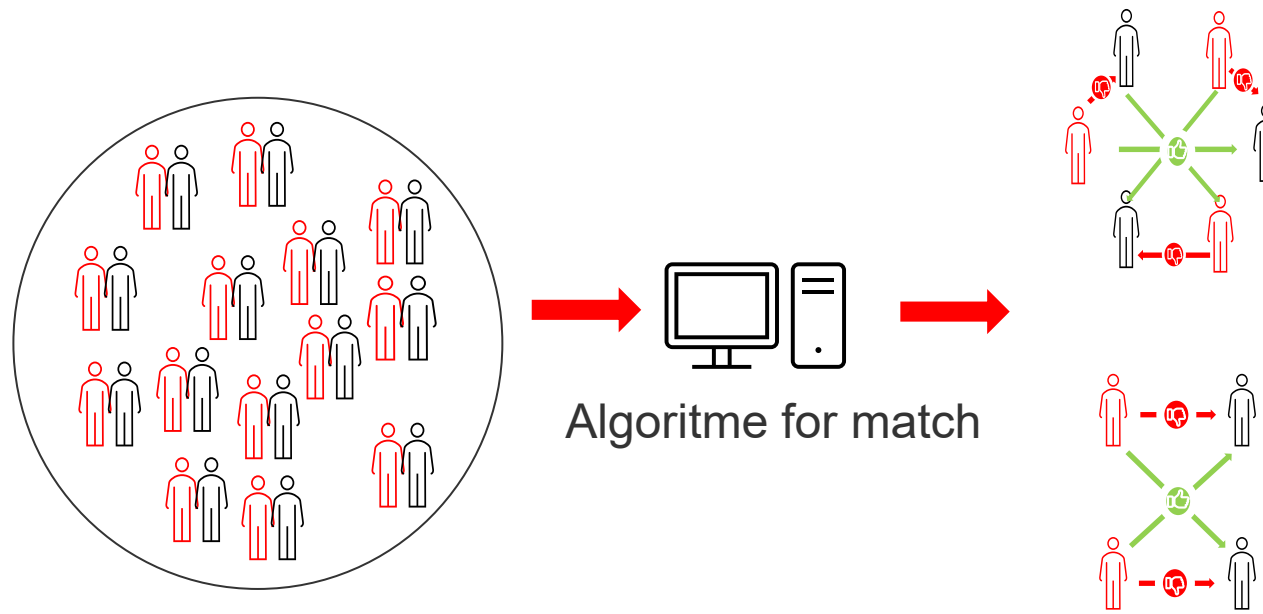
Tommy Andersson
Professor i økonomi
Universitetet i Lund

Nyretransplantation – en tidslinje



Et skridt fremad – STEP* programmet, start 2019

Par i STEP puljen → Match runde → Resultat → Evaluering → Praktisk planlægning → Tx



- Immunologi
- Kirurgi/Medicin
 - Donor
 - Anatomi
- Op tider
 - Kirurger
 - Anæstesi
- Koordinatorer

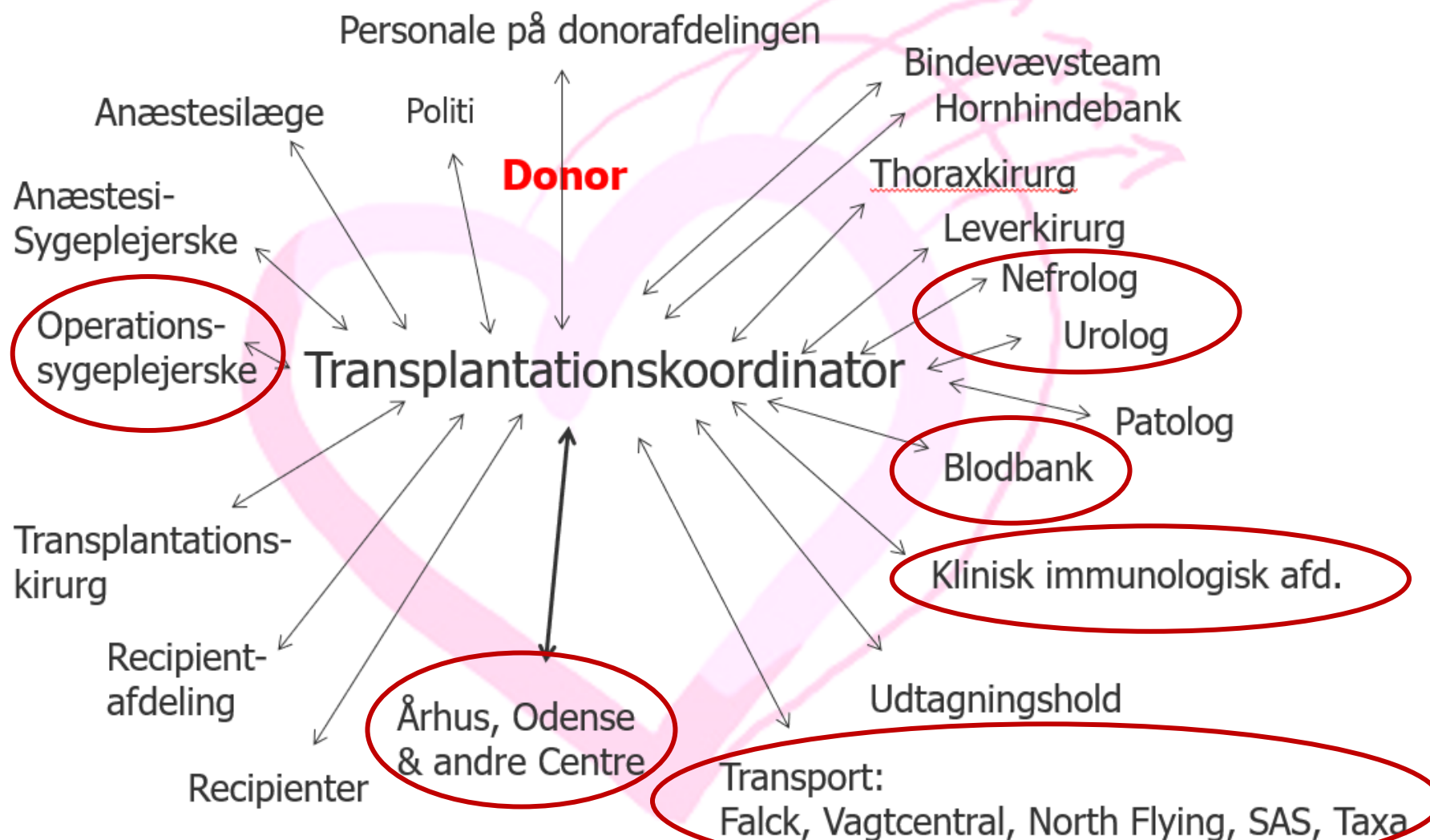
Koordinering af STEP-forløb

Praktik

Transport

Kommunikation

Samarbejdspartner-oversigt



RH har deltaget i ni STEP-udvekslinger siden 2020

- ***Mellem to centre***

- Fire udvekslinger
- Inklusiv en altruistisk donor i en af udvekslingerne

- ***Mellem tre centre***

- Fire udvekslinger

- ***Mellem fire centre***

- En udveksling
- Over flere dage
- Inklusiv en altruistisk donor

Koordinering af STEP-forløb

- Alt er planlagt på forhånd – dato, prøver, undersøgelser, mm.
- Online formøder, emails
- Udveksling af navne og telefonnumre på alle involverede
- Kontakt til operationsgangen – CKO 2043
- Bestilling af transport af organet, dagen før organudtag



Billedkilder:
Colourbox
AI-genereret billede

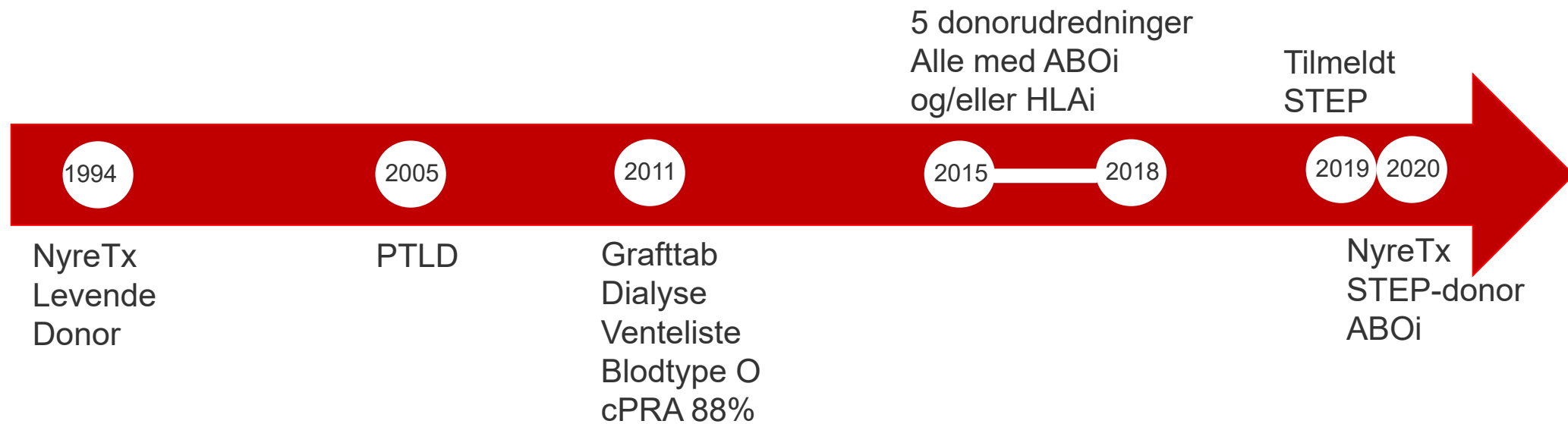
Transplantationskoordinatorens rolle på dagen

- Er donor og recipient klar? Tidlig morgenkontakt til det andet center
- Er transporten klar? Er flyet klar? Hvordan er vejret? Glider trafikken?
- Til stede på operationsstuen
- Løbende telefonisk kontakt til det andet center (eller andre)
 - Før AN-start
 - Før clamping/udtag
 - Før transportens afgang fra RH
 - Den modsatte donornyres ankomst til RH

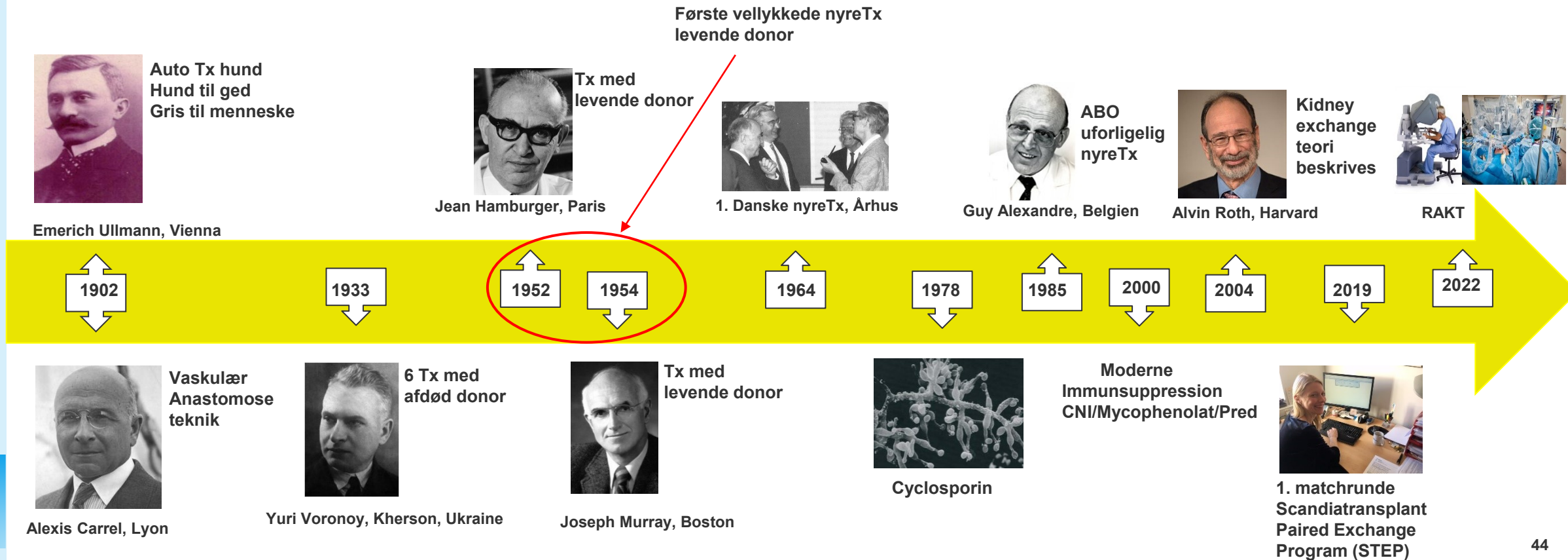


Mellbystrand Afkørsel 41 E6

En patientcase – hvordan gik det så?



Nyretransplantation – en tidslinje





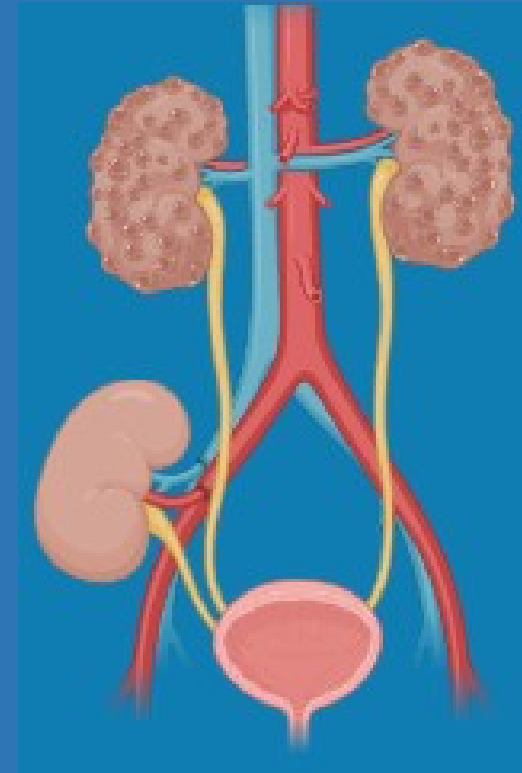
Aktuelle kirurgiske udfordringer ved nyretransplantation

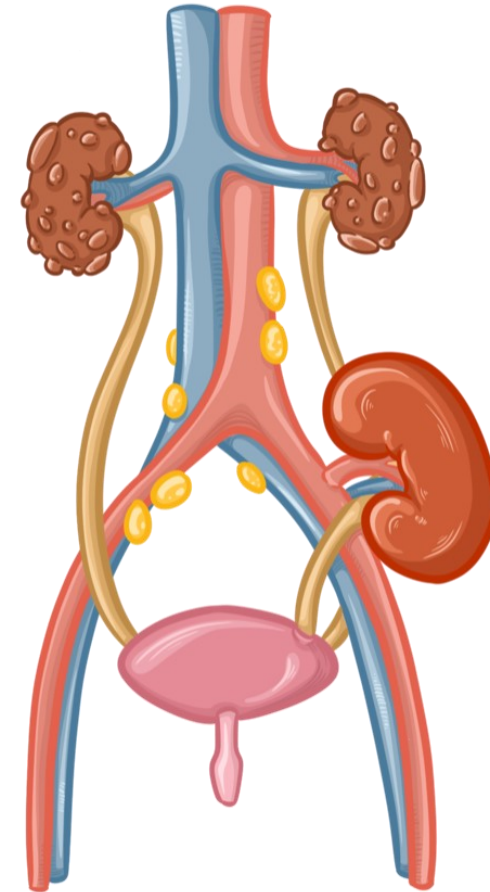
Andreas Røder, professor, overlæge, ph.d.

Milla Ortved, læge, ph.d.-stud.

Julia Dagnæs-Hansen, læge, ph.d.

Alberto Breda (professor, Barcelona)





<https://www.apollohospitals.com/health-library/post-dialysis-care/>



August 2014 - September 2021

571 recipienter (fra
levende og afdøde
donorer)

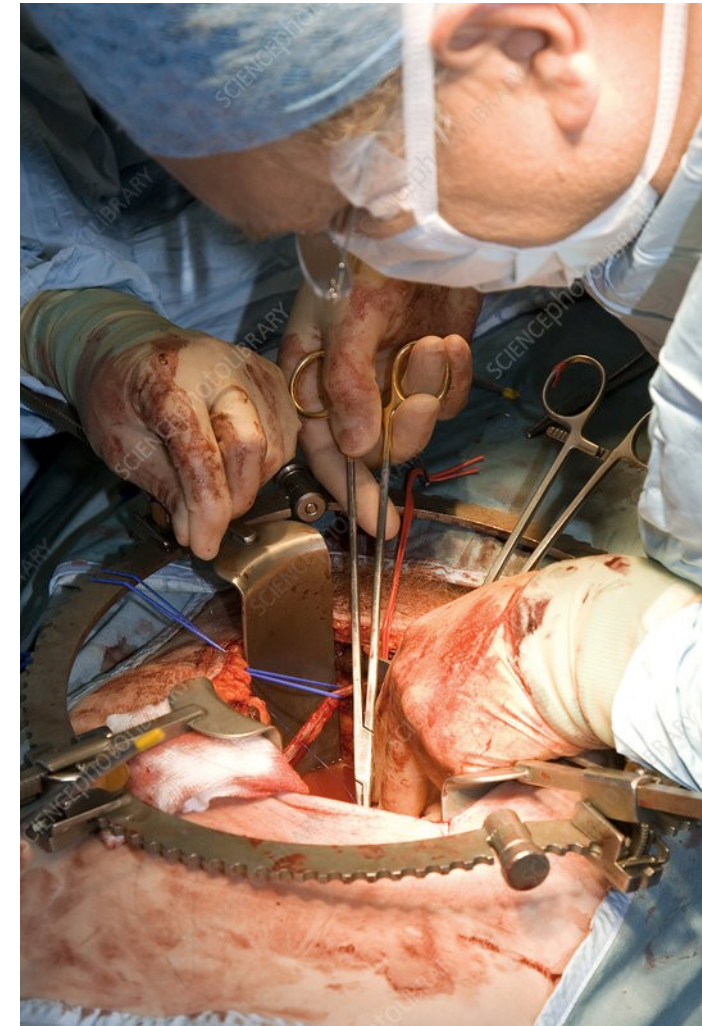
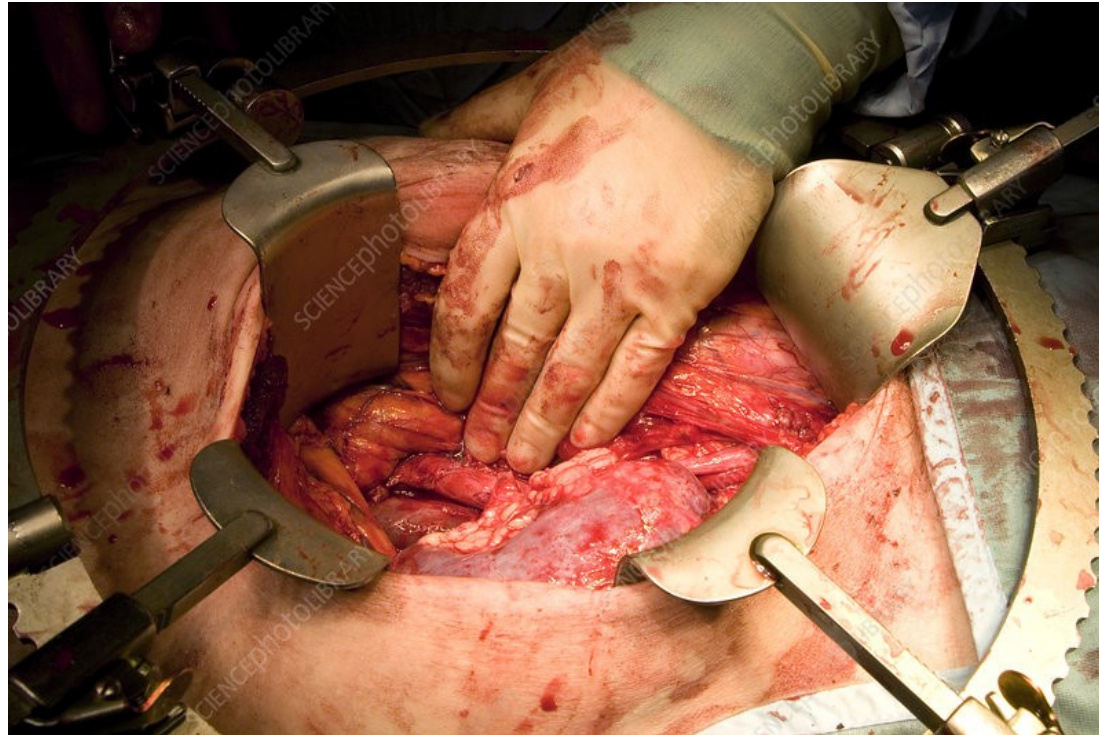
223 Levende donorer

Information om patienterne

Operative data

Postoperative komplikationer







Nyretransplantation

Kirurgiske komplikationer

22%

Betydende kirurgiske
komplikationer

17%

Vaskulære
komplikationer

16%

Re-opereret







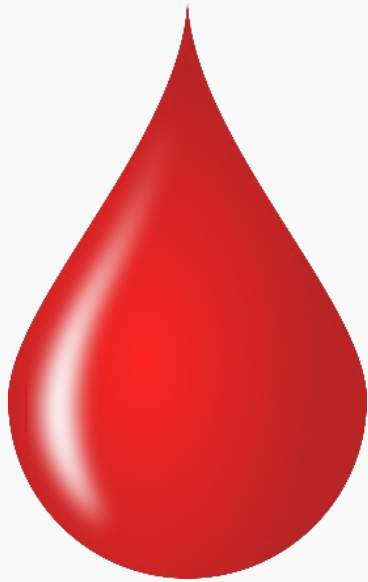
Vs



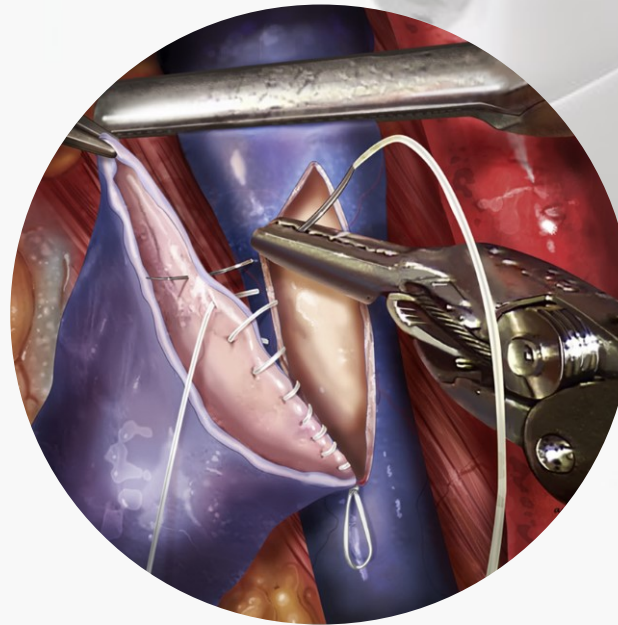


Nyretransplantation

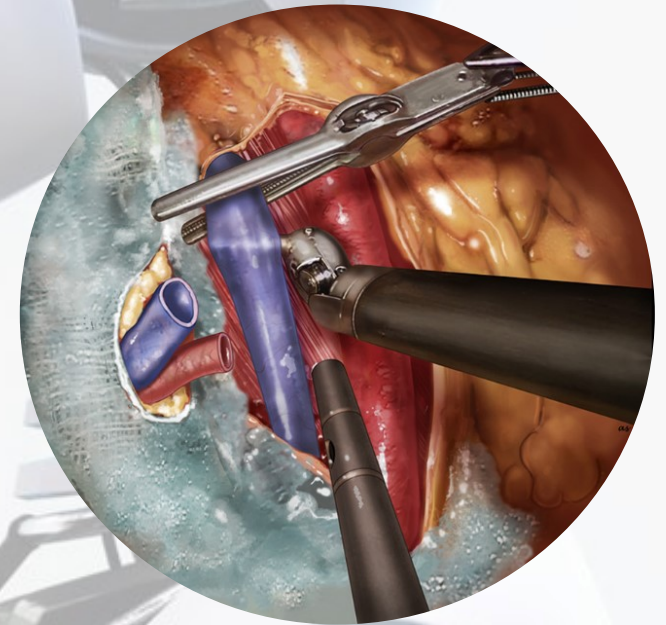
Hvorfor robot-kirurgi?



Reduceret blodtab



Fantastisk symaskine



Forstørrelsesglas





Robot-assisted kidney transplantation

Dr. Alberto Breda

Head of the Uro-oncological Unit and Surgical Kidney Transplantation team, Fundació Puigvert, Barcelona, Spain

Chair of the EAU Robotic Urology Section (ERUS)

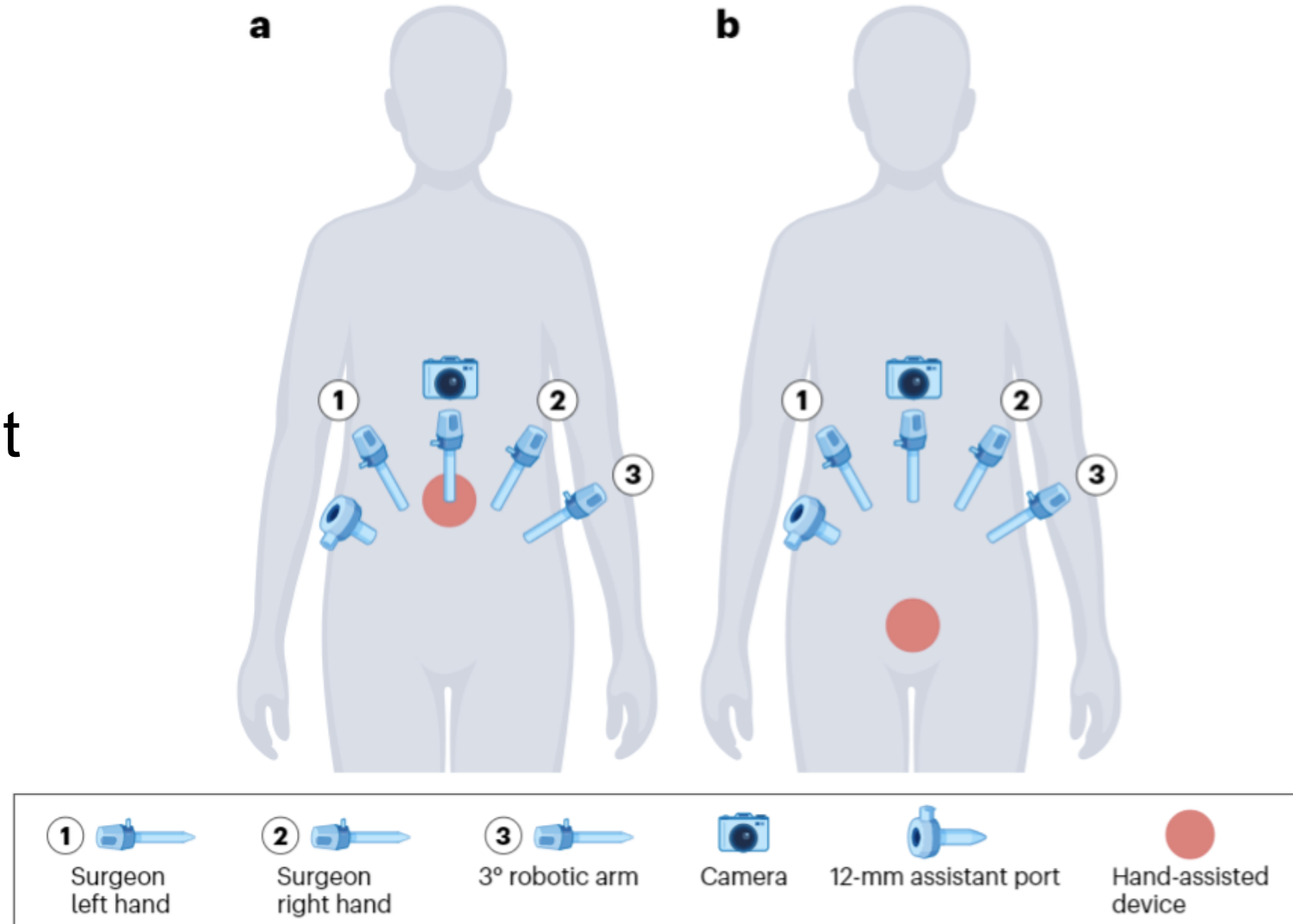
- No conflict of interest -





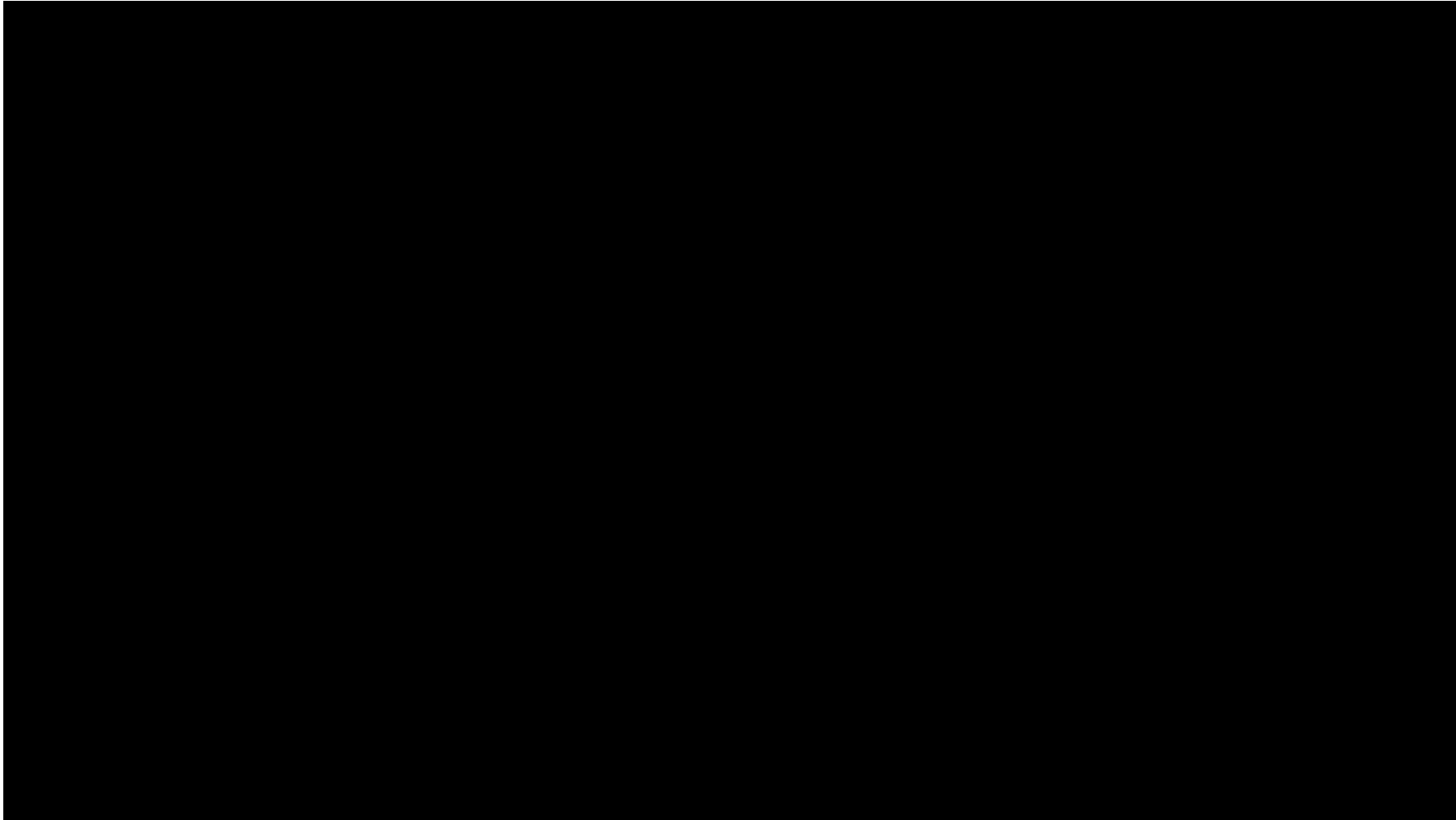
Patient positioning, trocars placement

Lithotomy position
30° Trendelenburg tilt





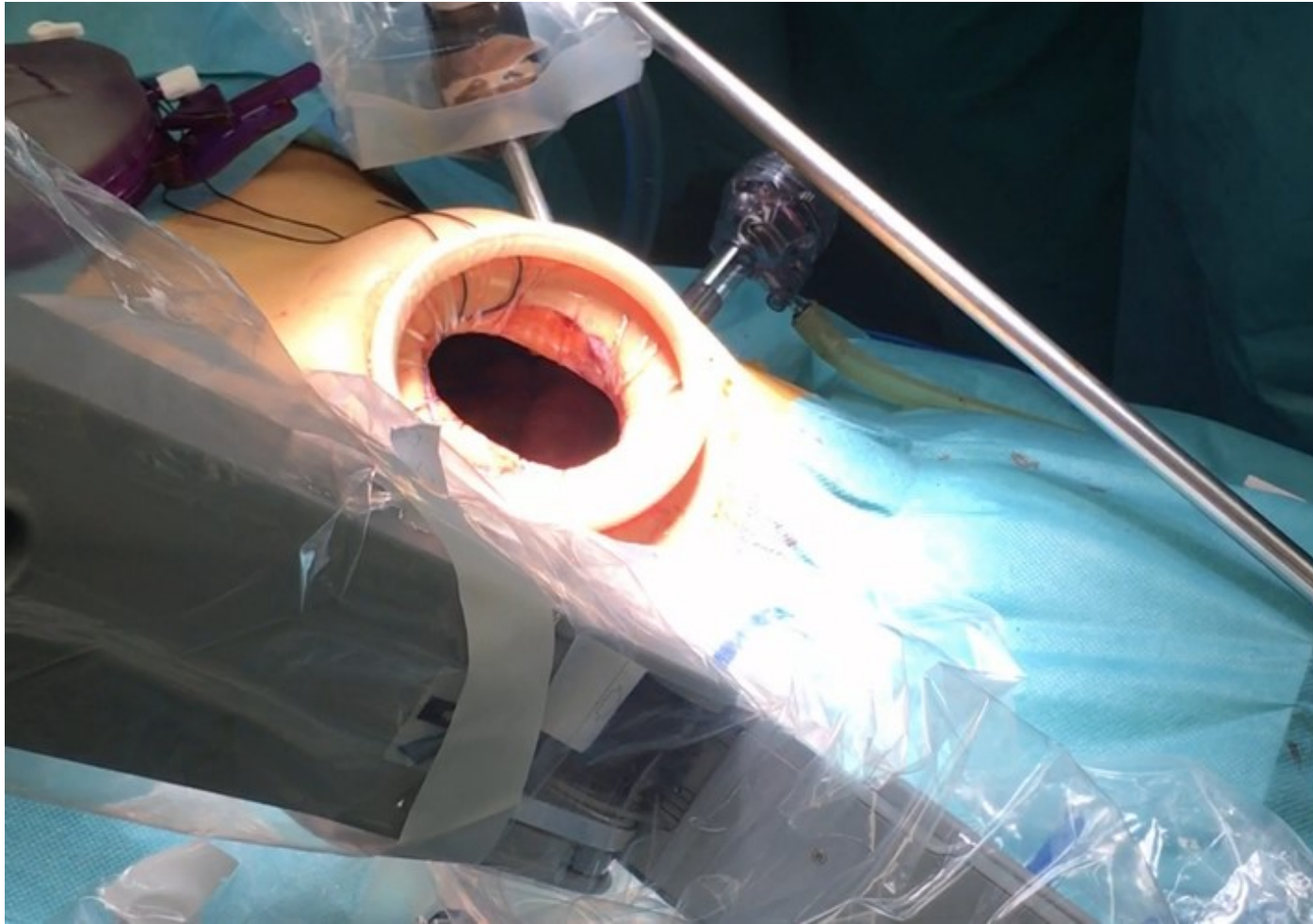
Periumbelical incision + gel-point insertion





Transplantation

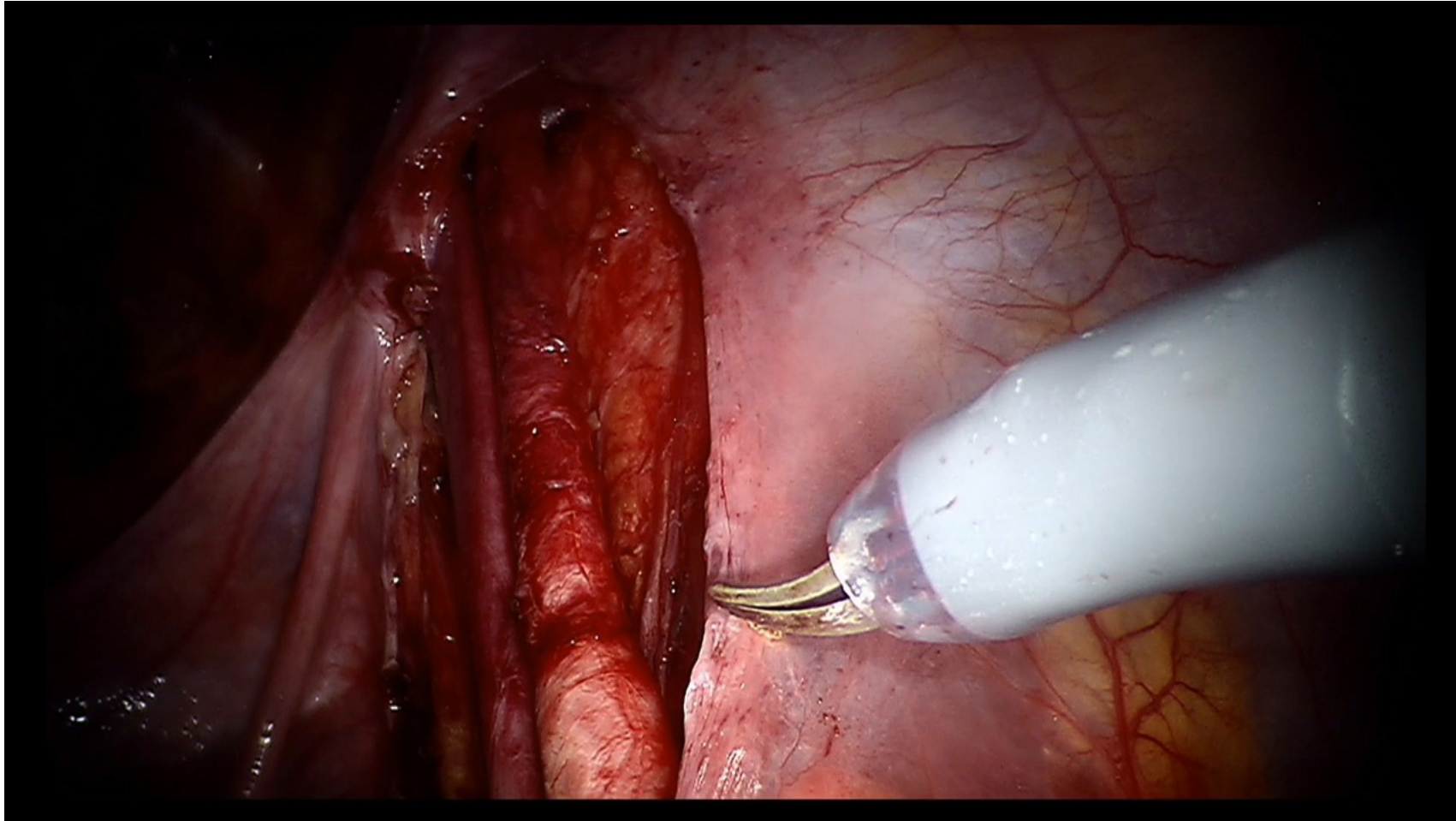
Introduction of the graft





Preparation of the transplantation bed

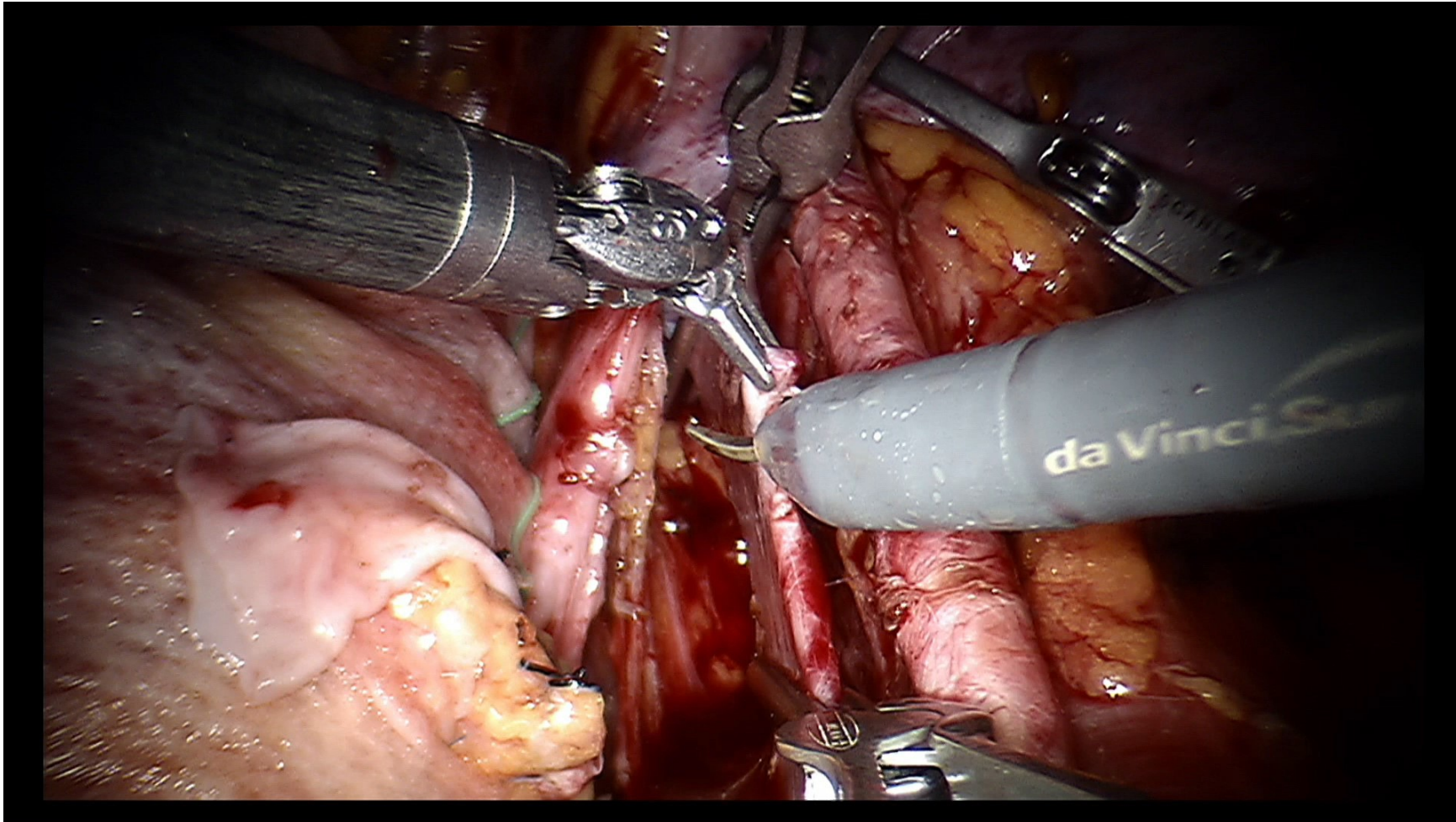
Creation of a retroperitoneal pocket





Transplantation

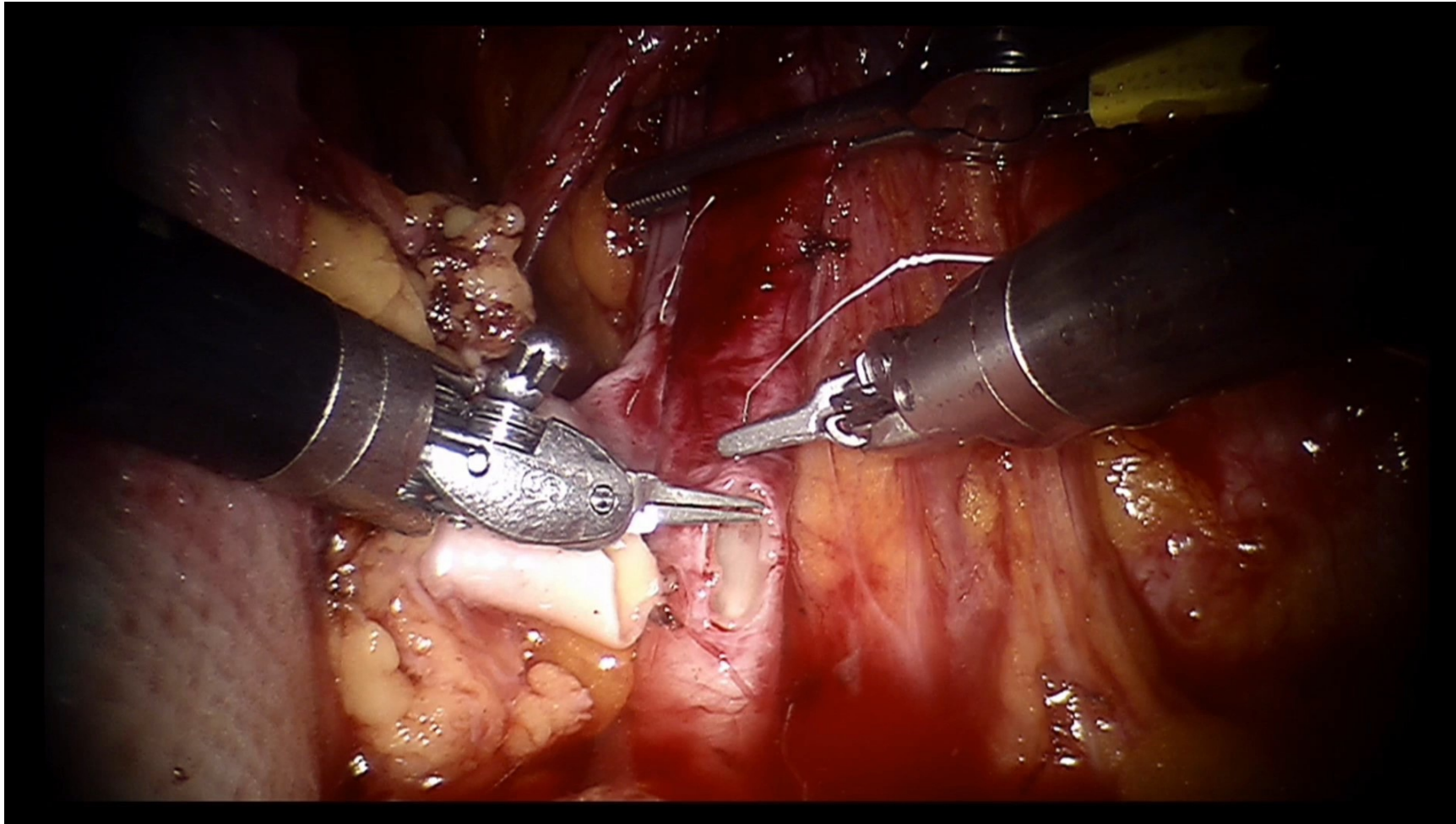
Venous anastomosis





Transplantation

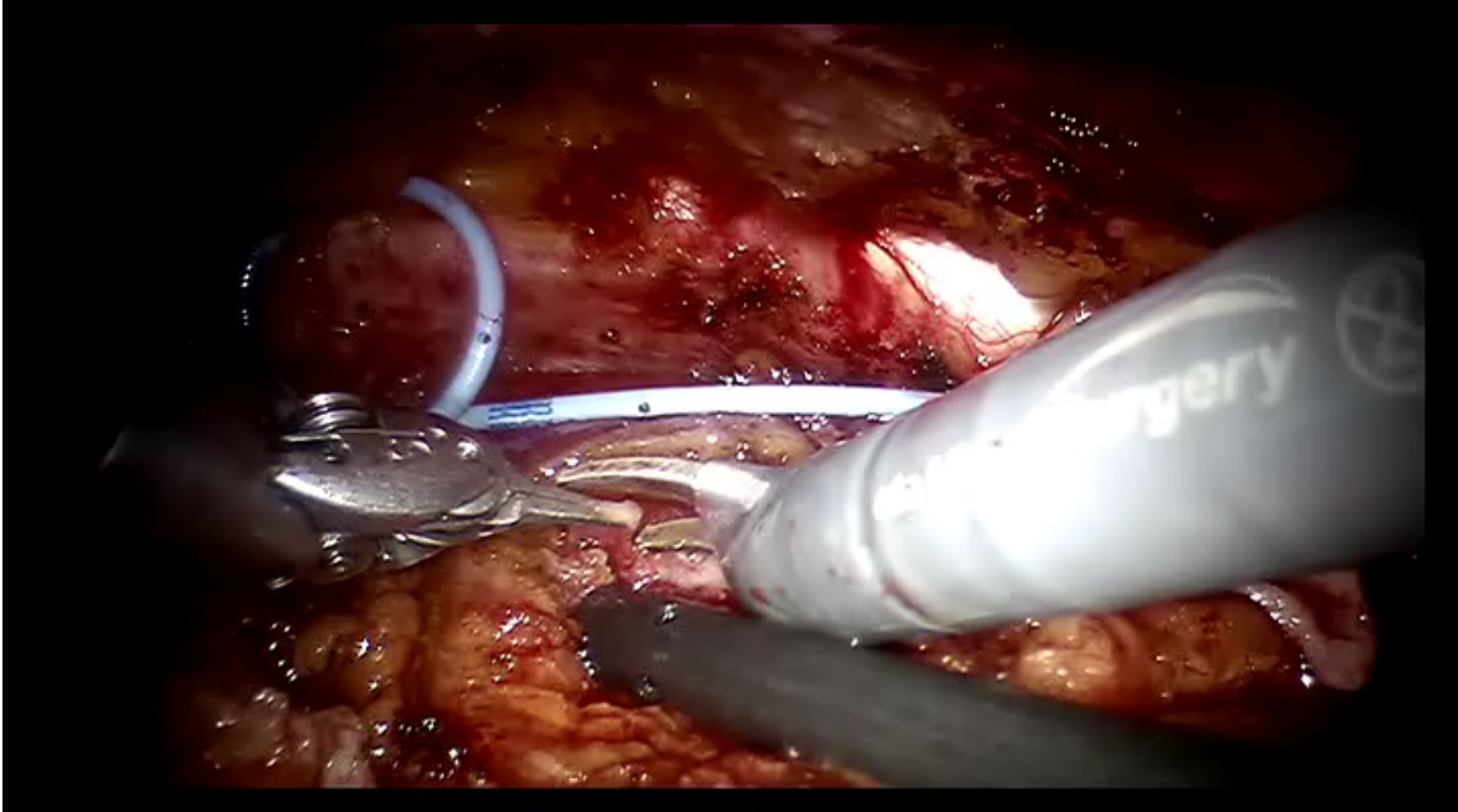
Arterial anastomosis





Transplantation

Ureteral reimplantation



Fundació Puigvert

Fundació Puigvert



Den er god med dig, Andreas





Hvad har vi gjort?

- Internationalt samarbejde



European Urology

Available online 9 January 2025

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Original Article

Robot-assisted Kidney Transplantation: The 8-year European Experience

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- Lokalt samarbejde: AN/OP – Nefrologisk - Urologisk



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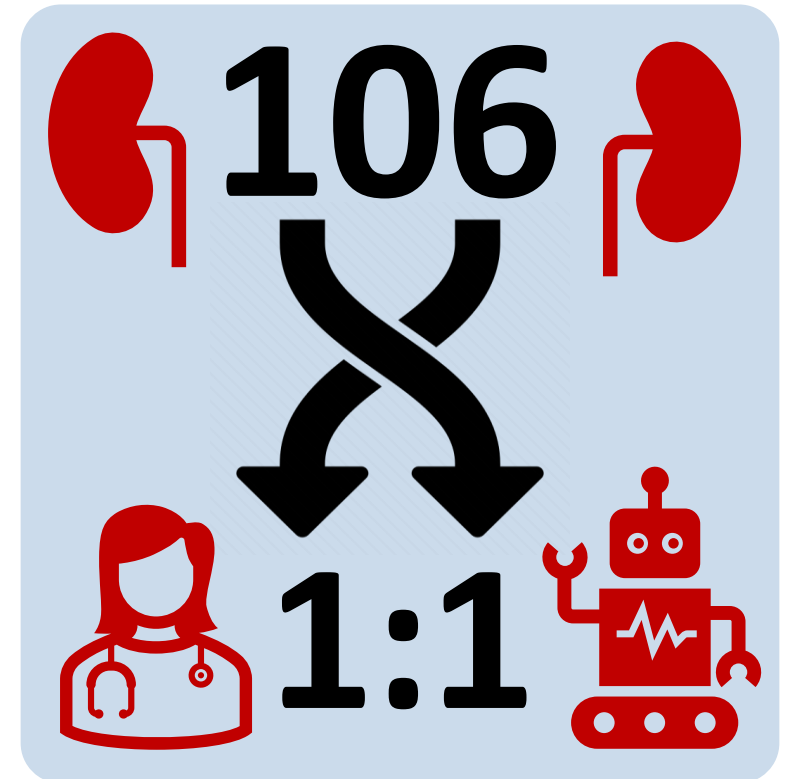
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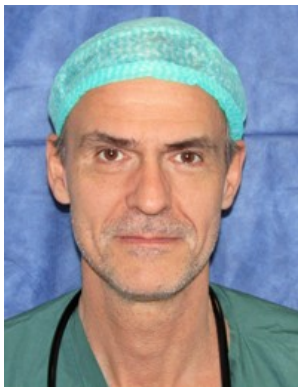
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Open-label randomised clinical trial investigating whether robot-assisted kidney transplantation can reduce surgical complications compared to open kidney transplantation (ORAKTx): study protocol for a randomised clinical trial

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