Türkiye'de Pulmoner Transplantasyonda Neredeyiz?

İPAH'da Nakil

Doç. Dr. Erdal YEKELER

Türkiye
Yüksek İhtisas
Eğitim ve Araştırma
Hastanesi
Ankara

«Sağlıkta Öncü Hastane»

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Göğüs Cerrahisi
&
Akciğer Nakli
Kliniği

İstanbul Girişimsel Kardiyoloji Kursu
17-18 Şubat 2017

İstanbul Girişimsel Kardiyoloji Akademisi

Akciğer nakli

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none k (İ

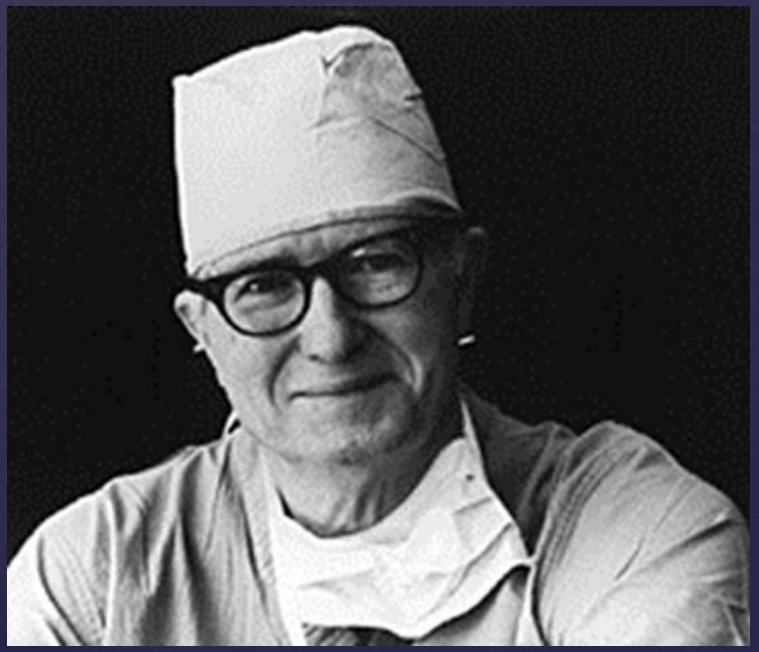
ip-4' davi

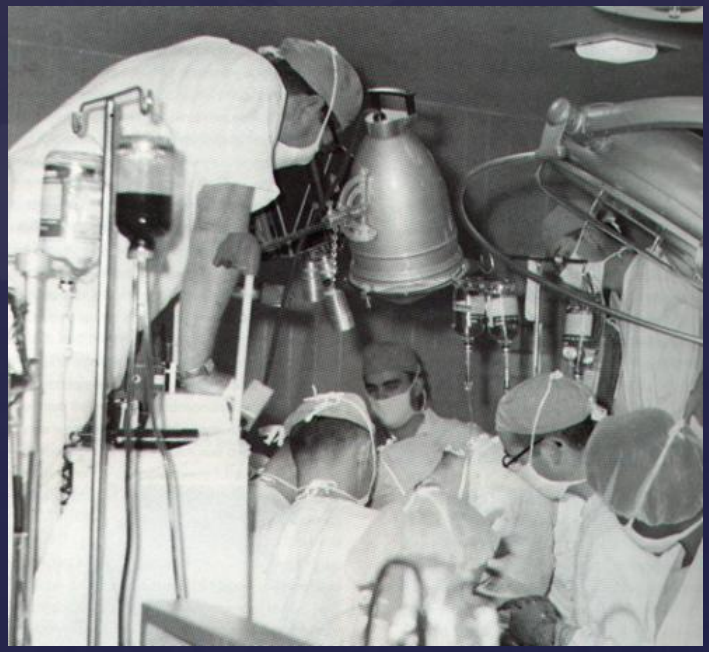
Akciğer nakli

- Tüm solid organ nakilleri içinde
  - En komplike işlem
  - Mortalitesi ve morbiditesi en fazla olan nakil
  - 5 yıllık survey %54 en kısa olan nakil
  - Median survey 7,1 yıl
  - Rejeksiyon oranı en fazla olan nakil
  - Enfeksiyon riskinin en fazla olduğu nakil

İlk deneyim

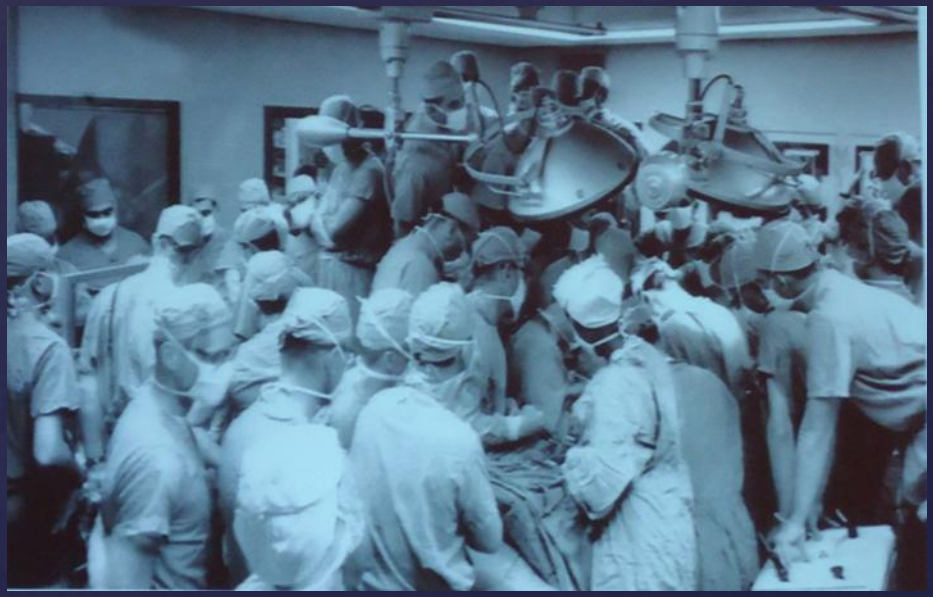
- Dr. James Hardy, Mississippi Üniversitesi-1963
- Akciğer kanseri bir olguya yapıldı
- 18 gün yaşadı ve böbrek yet. Ex oldu



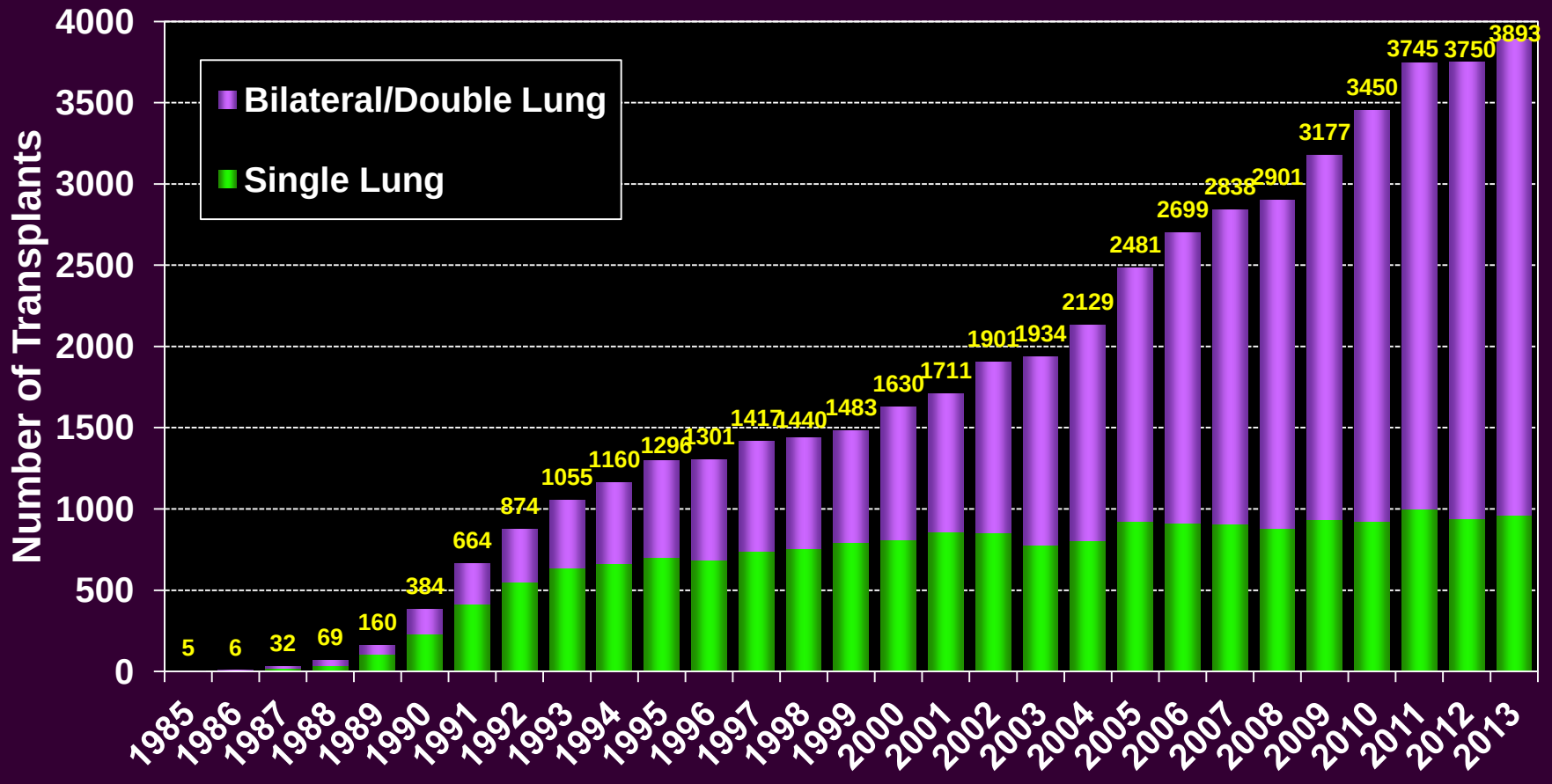


İlk başarılı akc. nakli

- 1983 yılında Dr. Joel Cooper tarafından Toronto Üni. de Fibrozis'li bir hastaya yapıldı.
- Tek Akciğer Nakli



Adult Lung Transplants
Number of Transplants by Year and Procedure Type



NOTE: This figure includes only the adult lung transplants that are reported to the ISHLT Transplant Registry. As such, this should not be construed as representing changes in the number of adult lung transplants performed worldwide.

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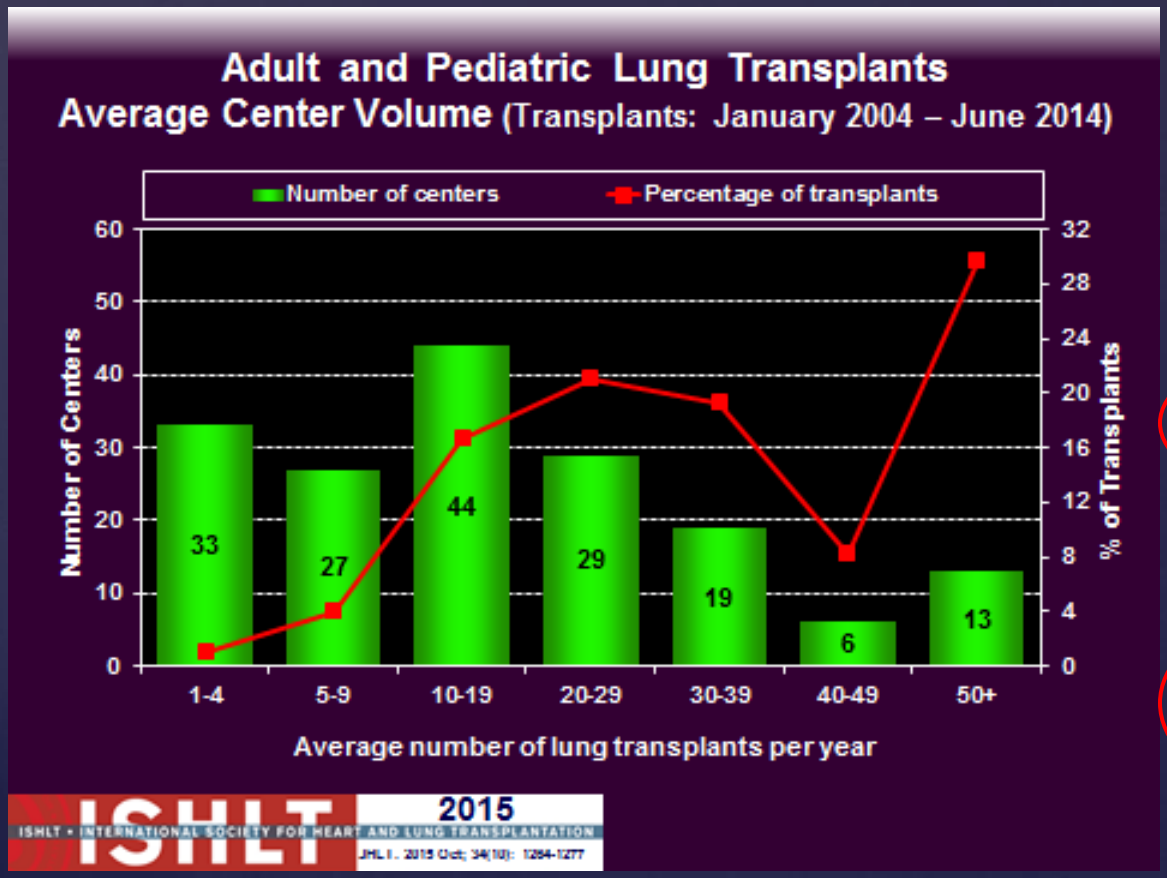
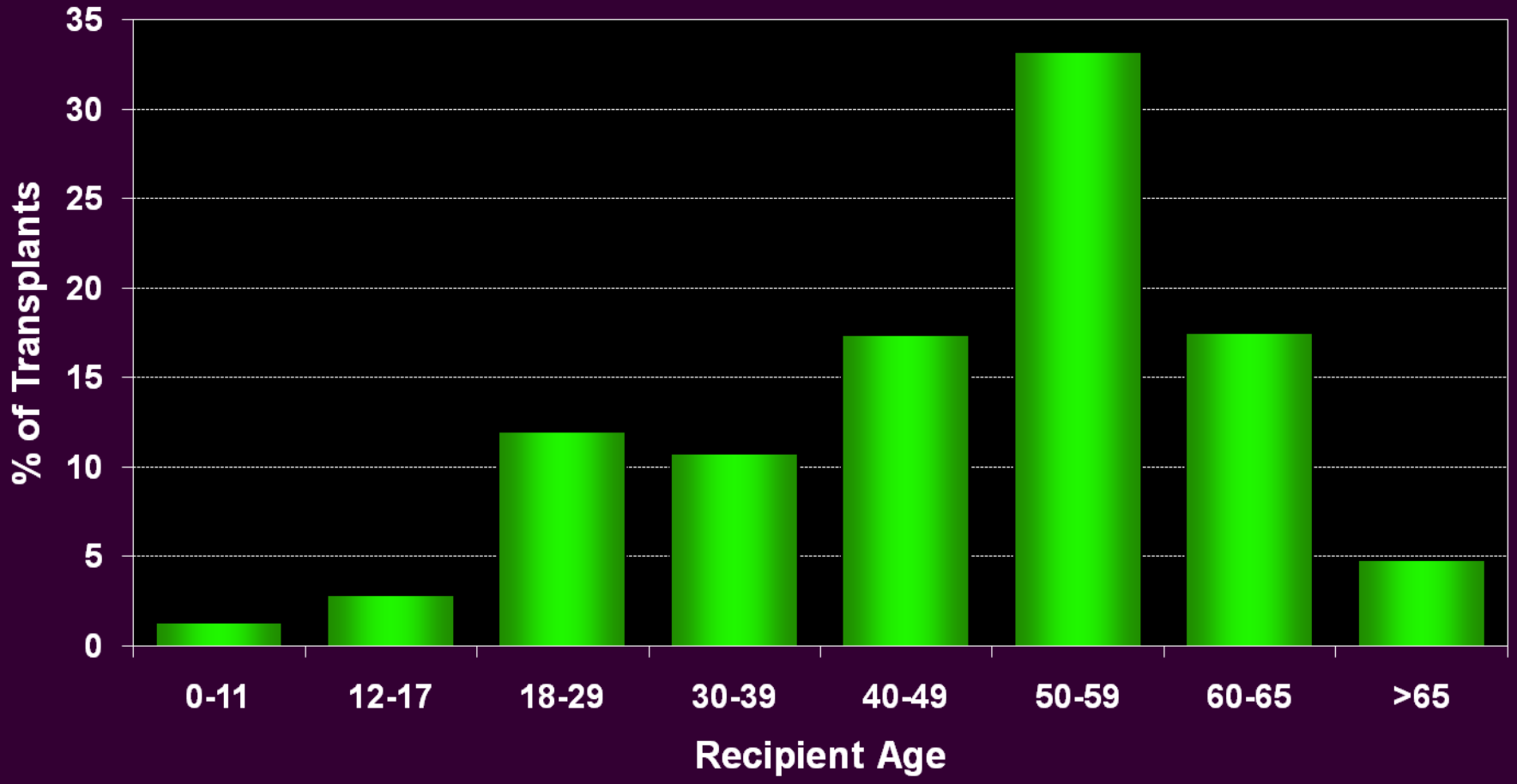
JHLT. 2015 Oct; 34(10): 1264-1277

Dünyada LuTX adet/yıl



- ✓ Toplam 171 merkez
- ✓ 13 merkez (%7,6) 50 adet/yıl 👍
- ✓ 133 merkez (%78) 30 adet/yıl altı yapıyor

AGE DISTRIBUTION OF LUNG TRANSPLANT RECIPIENTS (1/1985-6/2011)



ISHLT

2012

J Heart Lung Transplant. 2012 Oct; 31(10): 1045-1095

Adult Lung Transplants
Indications (Transplants: January 1995 – June 2014)

Diagnosis	SLT (N=16,226)	BLT (N=29,457)	TOTAL (N=45,683)
COPD/Emphysema	6,826 (42.1%)	7,856 (26.7%)	14,682 (32.1%)
Idiopathic Pulmonary Fibrosis	5,561 (34.3%)	5,442 (18.5%)	11,003 (24.1%)
Cystic Fibrosis	228 (1.4%)	7,191 (24.4%)	7,419 (16.2%)
Alpha-1	792 (4.9%)	1,667 (5.7%)	2,459 (5.4%)
Idiopathic Pulmonary Arterial Hypertension	91 (0.6%)	1,250 (4.2%)	1,341 (2.9%)
Pulmonary Fibrosis, Other	758 (4.7%)	1,125 (3.8%)	1,883 (4.1%)
Bronchiectasis	65 (0.4%)	1,167 (4.0%)	1,232 (2.7%)
Sarcoidosis	301 (1.9%)	857 (2.9%)	1,158 (2.5%)
Retransplant: Obliterative Bronchiolitis	338 (2.1%)	440 (1.5%)	778 (1.7%)
Connective Tissue Disease	200 (1.2%)	481 (1.6%)	681 (1.5%)
Obliterative Bronchiolitis (Not Retransplant)	110 (0.7%)	381 (1.3%)	491 (1.1%)
LAM	142 (0.9%)	330 (1.1%)	472 (1.0%)
Retransplant: Not Obliterative Bronchiolitis	210 (1.3%)	246 (0.8%)	456 (1.0%)
Congenital Heart Disease	93 (0.6%)	333 (1.1%)	426 (0.9%)
Cancer	7 (0.0%)	30 (0.1%)	37 (0.1%)
Other	504 (3.1%)	661 (2.2%)	1,165 (2.6%)

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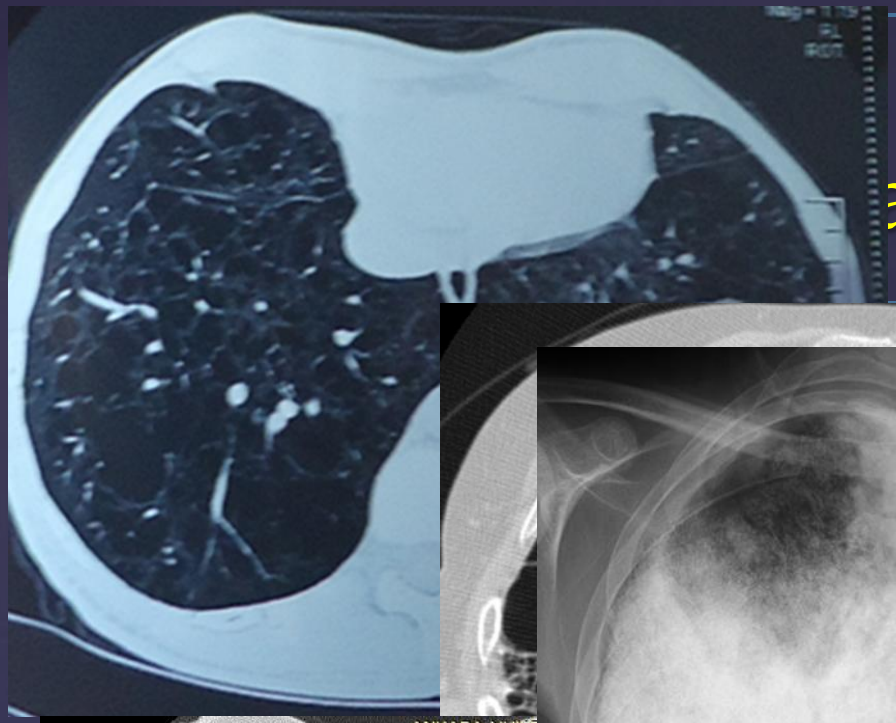
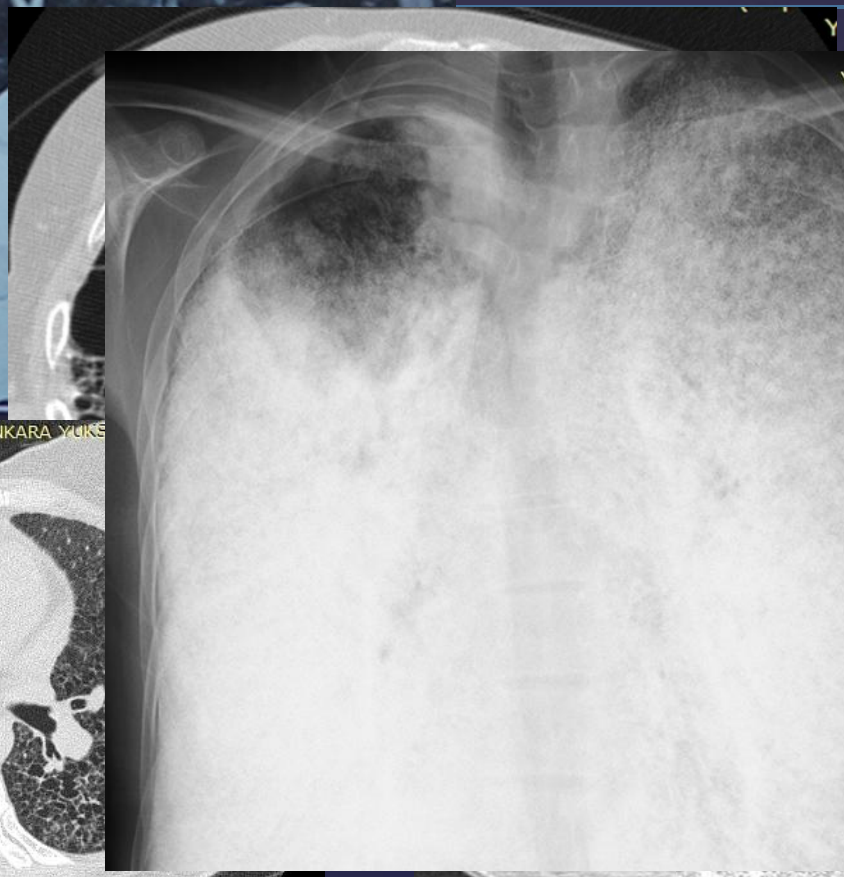
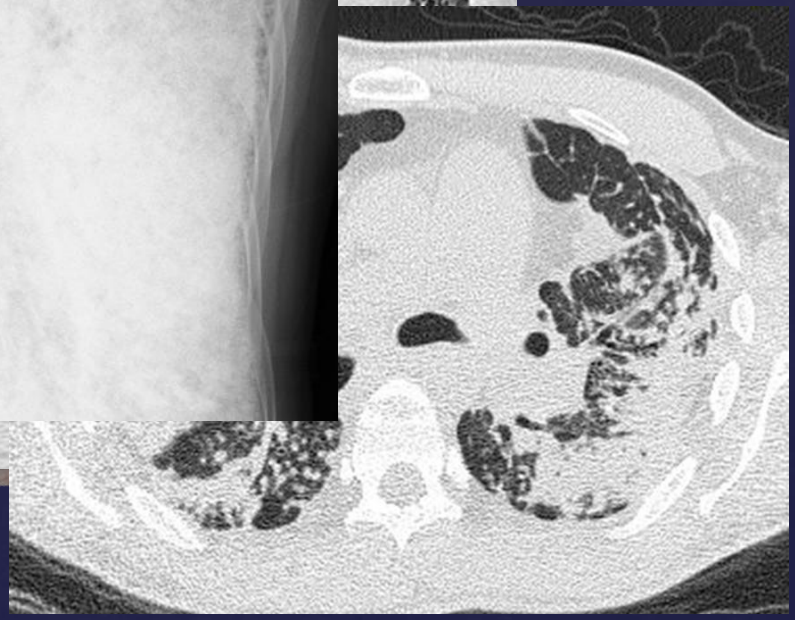
For some retransplants, a diagnosis other than retransplant was reported, so the total number and percentage of retransplants may be greater.

asyonları







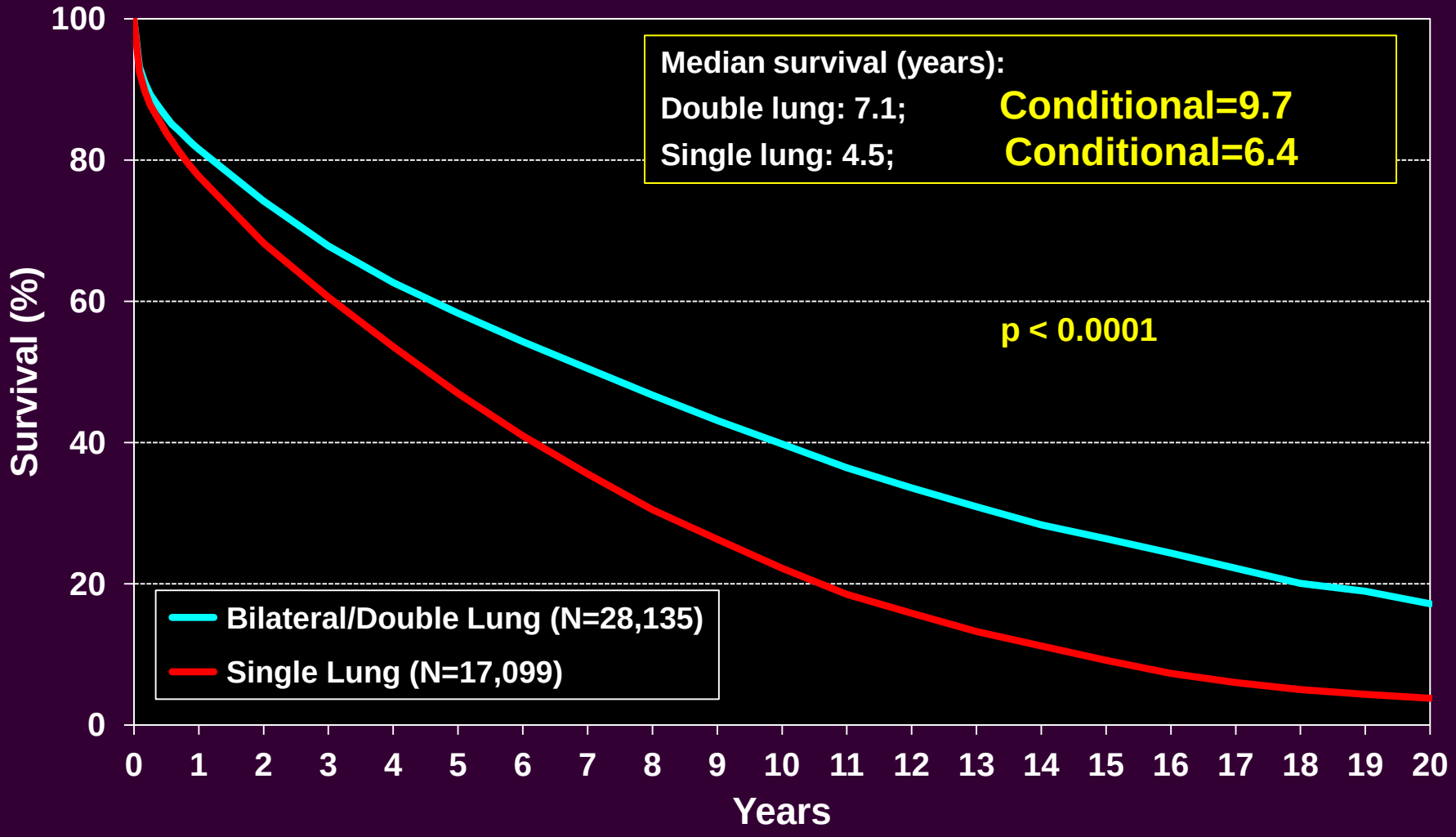
Kontrendikasyonlar (mutlak-relative)

- Malignite
- İkincil organ yetmezliği
- Aktif viral enf. (HIV, HBV, HCV, Aktif TBC)
- Kanama diyatezi
- Yetersiz sosyo-ekonomik destek
- Depresyon ve uyumsuz kişilik
- Multipl coroner hastalık
- BMI>35
- Aktif TBC
- Multi-drug rezistan kr.enfeksiyon

- İleri yaş >65
- Unstabilite (MV, ECMO)
- Dirençli bakteri, virus, mantar kolonizasyonu veya enfeksiyonu.
- BMI >31 ve BMI<18
- Şiddetli Osteoporozis
- Önceki lobektomi
- Torasik anatomik bozukuluk
- Burkholderia cenocepacia

Adult Lung Transplants

Kaplan-Meier Survival by Procedure Type for Primary Transplant Recipients (Transplants: January 1990 – June 2013)



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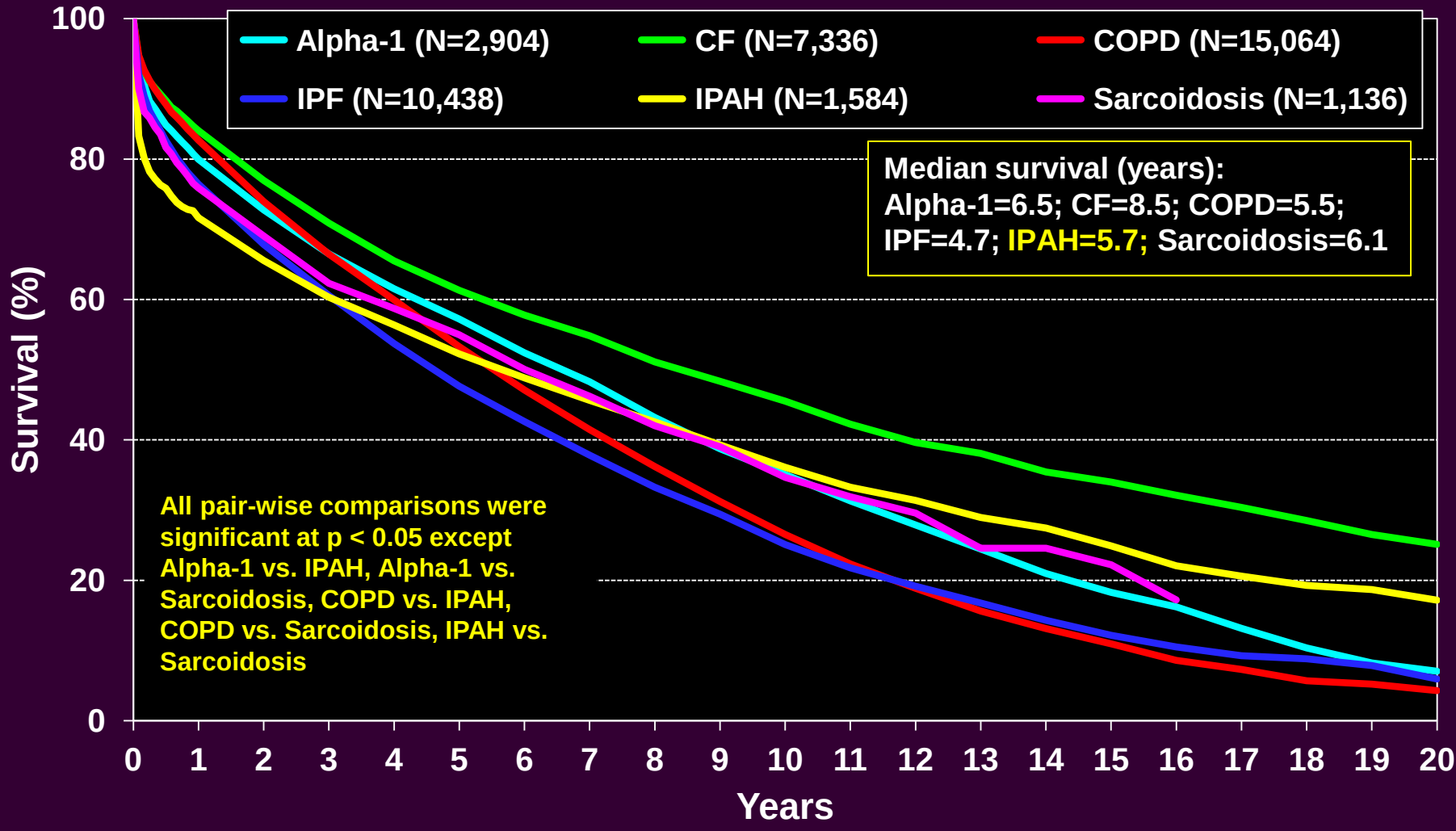
2015
JHLT. 2015 Oct; 34(10): 1264-1277

Adult Lung Transplants
Kaplan-Meier Survival by Diagnosis
(Transplants: January 1990 – June 2013)



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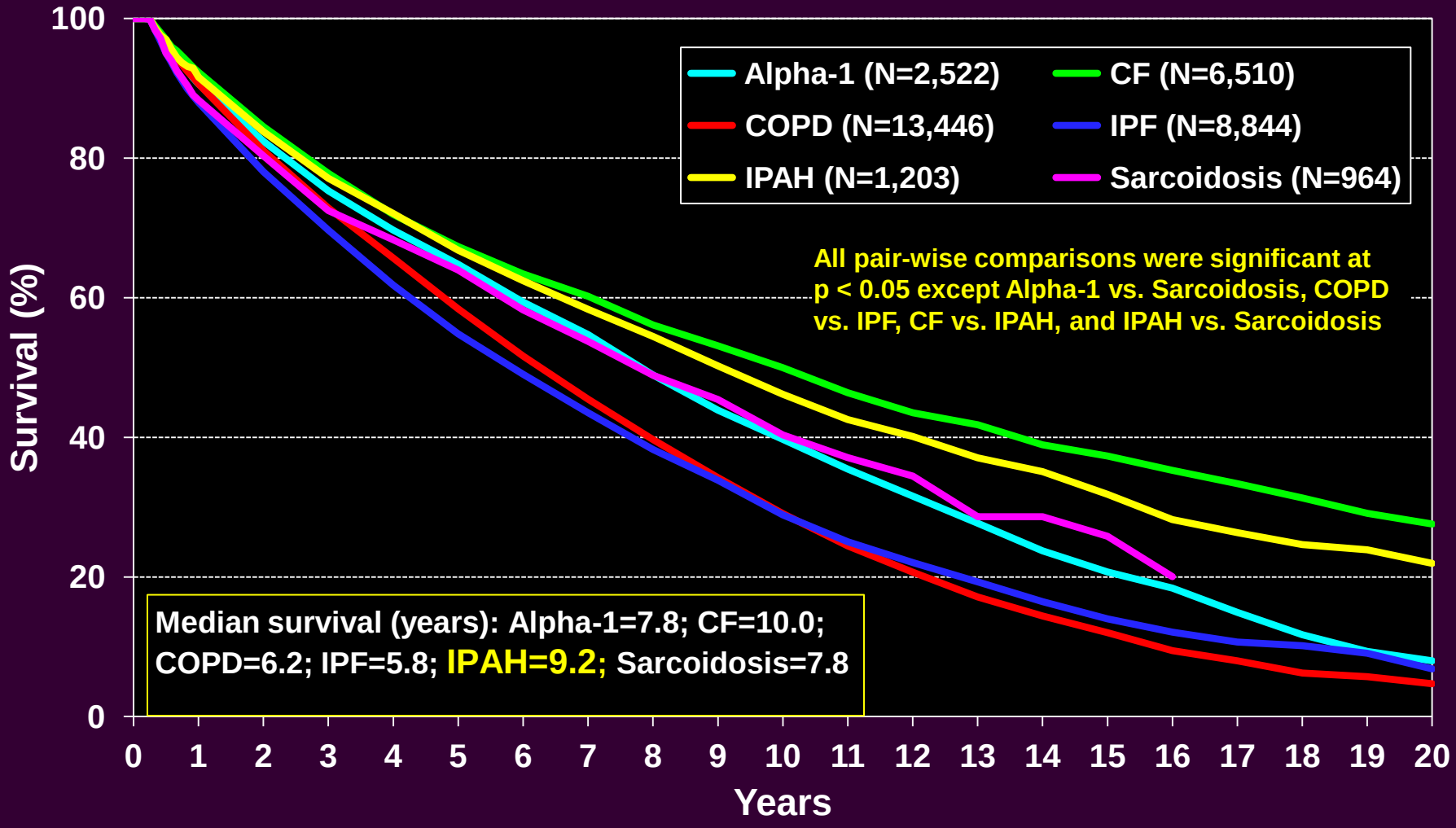
JHLT. 2015 Oct; 34(10): 1264-1277

Adult Lung Transplants

Kaplan-Meier Survival by Diagnosis Conditional on Survival to 3 Months (Transplants: January 1990 – June 2013)



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2015
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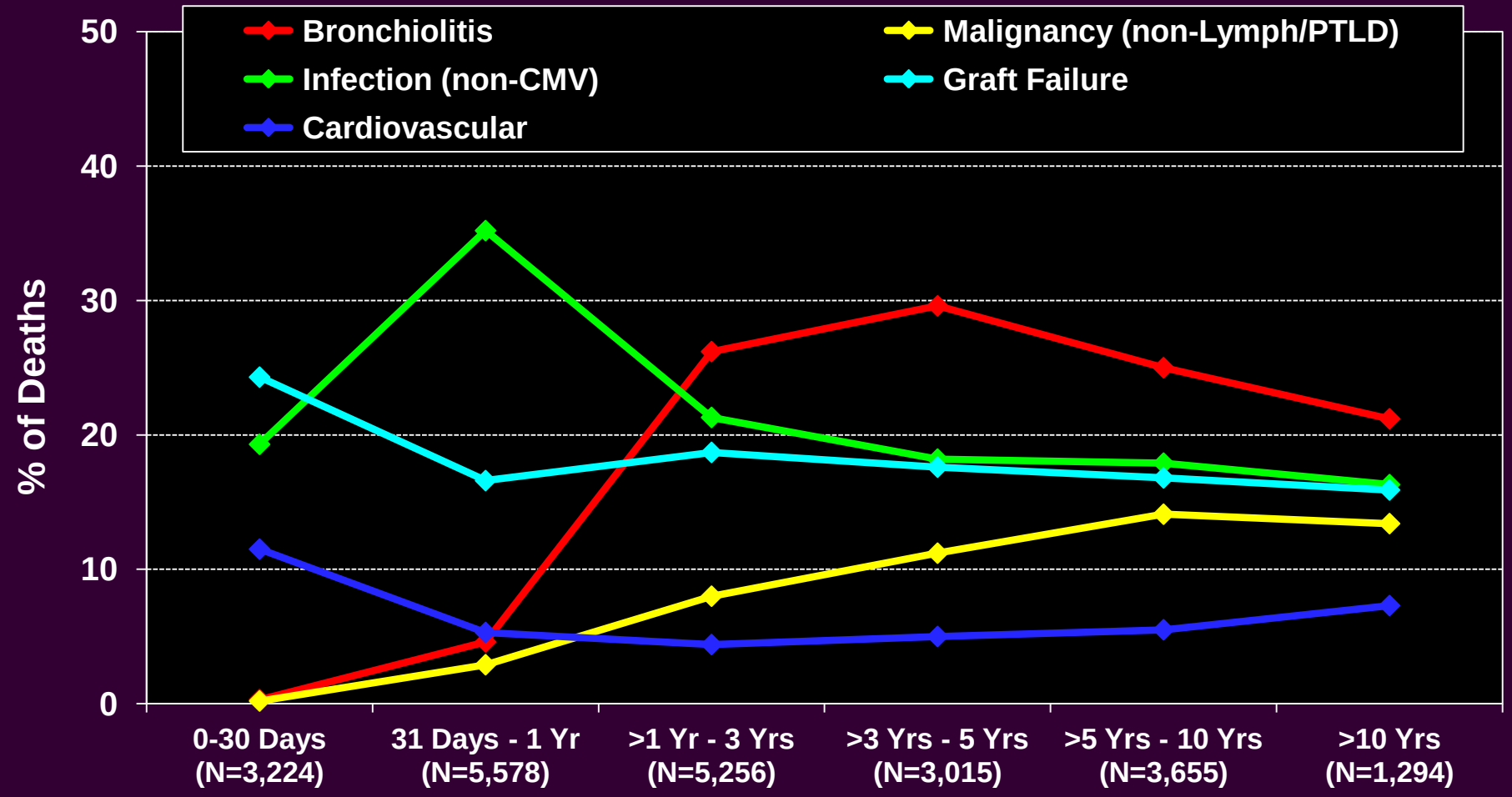
Adult Lung Transplants
Relative Incidence of Leading Causes of Death
(Deaths: January 1990 – June 2014)



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JHLT. 2015 Oct; 34(10): 1264-1277

Ülkemizde solid organ nakli

Yıl	Kadaverik Donör	Canlı Donör	Nakil Sayısı
2002	307	438	745
2006	448	897	1345
2011	930	3057	3987
2012	893	3117	4010
2013	976	3318	4294
2014	407	3245	4261
2015	472	3445	4552
2016	560	4054	4636

Ülkemizde solid organ nakli

Yıl/Organ	Böbrek	Kalp	Karaciğer	Akciğer
2016	3214	66	1334	22
2015	3204	89	1216	30
2014	2924	78	1211	33
2013	2945	63	1249	32
2012	2909	61	1002	25

Avrupa'da solid organ nakli ve LuTX

Table 4.9(ii) Transplants in 2014, by transplant country

Deceased donor transplants	A	B	D	H	HR	NL	SLO	Non-ET	Total	% of deceased donor transplants
Kidney	343	386	1366	325	178	434	54	0	3086	49.1 %
Kidney en bloc	8	2	19	1	1	2	0	0	33	0.6 %
Heart	66	78	292	58	34	51	33	5	617	9.8 %
Single lung	2	5	46	0	0	13	0	0	66	1.1 %
Double lung	132	98	296	0	0	78	0	1	605	9.6 %
Liver	133	203	773	74	122	156	30	1	1492	23.8 %
Split liver	0	10	87	0	0	9	0	0	106	1.7 %
Pancreas	2	1	14	0	1	1	0	0	19	0.3 %
Pancreas islets	0	7	0	0	0	6	0	0	13	0.2 %
Heart + double lung	0	0	9	0	0	0	0	0	9	0.1 %
Heart + single kidney	2	4	3	0	0	0	0	0	9	0.1 %
Double lung + liver	0	1	1	0	0	0	0	0	2	0.0 %
Liver + pancreas	0	2	2	0	0	0	0	0	4	0.1 %
Liver + pancreas + kidney	0	1	0	0	0	0	0	0	1	0.0 %
Liver + kidney	3	14	13	1	2	4	1	0	38	0.6 %
Split liver + kidney	0	0	3	0	0	0	0	0	3	0.0 %
Pancreas + kidney	19	7	104	14	4	27	0	0	175	2.8 %
Total (deceased donor) transplants	710	819	3028	473	342	784	118	7	6281	100.0 %

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Pancreas islets	0	7	0	0	0	6	0	0	13	0.2 %
Heart + double lung	0	0	9	0	0	0	0	0	9	0.1 %
Heart + single kidney	2	4	3	0	0	0	0	0	9	0.1 %
Double lung + liver	0	1	1	0	0	0	0	0	2	0.0 %
Liver + pancreas	0	2	2	0	0	0	0	0	4	0.1 %
Liver + pancreas + kidney	0	1	0	0	0	0	0	0	1	0.0 %
Liver + kidney	3	14	13	1	2	4	1	0	38	0.6 %
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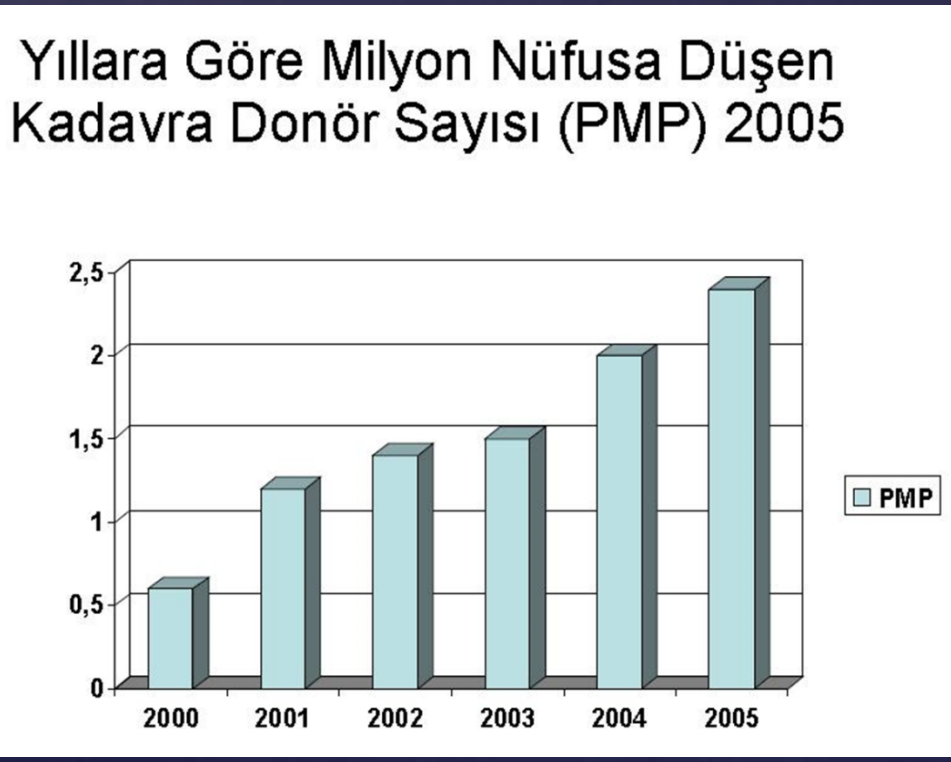
Merkezler ve olgu sayıları

Merkez	2004	2009	2010	2011	2012	2013	2014	2015	2016	2017	Toplam
Süreyyapaşa Koşuyolu	-	6	3	5	13	18	12	18	4	2	76+6
Yedikule	-	-	-	-	10	8	12	3	-	-	33
Yüksek İhtisas	-	-	-	-	-	5	6	5	11	1	28
Çapa	3	-	-	-	1	-	2	2	4	-	12
Marmara	-	-	-	-	-	-	1	1	1	-	3
Ege	-	1	-	-	-	-	-	-	2	-	3
GATA	-	-	-	-	-	1	-	-	-	-	1
Toplam	3	7	3	5	24	32	33	29	22	3	**162**

Donör sayısı

- Ülkemizde milyon nüfus başına düşen kadavra donör sayısı (PMP)



- 2013 de milyon nüfus başına (PMP) donör sayısı 5,2.
- 2016: 5,7
- Yunanistan'da; 6
- Avusturya ve İspanya gibi ülkelerde 35-55 kadar olmaktadır

Akciğer kullanılabilirliği

[SS-045]
Akciğer nakli için donör değerlendirmesi: 206donörün analizi

Alkın Yazıcıoğlu, Yeşim Arslan, Mahmut Subaşı, Erdal Yekeler
Türkiye Yüksek İhtisas Eğitim ve Araştırma Hastanesi, Göğüs Cerrahisi ve Akciğer Nakli Kliniği, Ankara.

GİRİŞ: Akciğer nakli(LuTx) için donör seçimi yapılan naklin başarısında önemlidir. Serimizde kabul edilebilir uygun donör oranı %15,0 olarak bulunmuş olup dünya ortalamasının altındadır.
MATERYAL-METOD: Mart2013–Aralık2014 tarihleri arasında LuTx için sunulan 206 erişkin donör yaş,cinsiyet,beyin ölümü nedeni, Bölge Koordinasyon Merkezi (BKM), entübasyon süresi,kan gazı analizleri,red veya kabul oranları ve red nedenleri açısından değerlendirildi.
BULGULAR: Değerlendirilen 206 donörün 136'sı(%66,0)erkek; 70'i(%34,0)bayan olup ortalama yaş 41,4(16–68) yıl olarak hesaplandı. Donörler en çok İzmir BKM'den olup(n=47, %22,8) bunu Ankara BKM(n=37, %17,9) izledi. En sık beyin ölümü nedeni intrakraniyal patolojilerdi(n=188, %91,3). Donörlerin ortalama entübasyon süresi 4,07 gün(1–20) olarak hesaplanmış olup kan gazı analizinde parsiyel oksijen basıncı ortalama 237,4mmHg(45–695) olarak tespit edildi. Donörlerden 11'i(%5,3) LuTx için kabul edildi. Reddedilen 195 donörün ensık red nedeni düşük kan gazı(n=149,%76,4), uzun entübasyon süresi(n=66,% 33,8),donörde enfeksiyon bulguları(n=43,%22,0), donörün sigara geçmişi(n=38,%19,5) ve ileri donör yaşı(n=37,%19,0) idi (Tablo1).
206 donörün 53'ünün(%25,7) PaO2/FiO2 oranı 300mmHg'nın üzerindeydi; bunlardan 11'i alıcılara kabul edildi. Kalan 42 donörden 22'sinde, red nedenleri birden çok neden içermekte olup; donörde enfeksiyon bulguları(n=11,%50), uzun entübasyon süresi(n=8,%36,4), sigara hikayesi(n=7,%31,8) ve travma bulguları (n=3,%13,6) olarak sıralandı.
Reddedilen donörlerin 20'sinin hem PaO2/FiO2 oranı 300 mmHg'nın üzerindeydi hem de diğer standart donör kriterlerinin tamamını karşılıyordu. Bu gruptaki donörlerin red nedenleri ise uygun boyutta alıcı olmaması(bekleme listesinin dar olması),alıcıda enfeksiyon bulguları; alıcının uzak mesafede olması(n=13,% 65,0), ekip yetersizliği(n=5,%25,0) olarak sıralandı (Tablo 2).
TARTIŞMA: LuTx için reddedilen donörlerde en sık neden düşük kan gazı oldu, bunu uzun entübasyon süresi takip etti. Sunulan 206 donörden sadece 53'ünün (%25,7) parsiyel oksijen basıncı 300mmHg'nın üzerinde olup, 31(%15,0) donör nakil için uygun kriterler taşımaktaydı. Bizim serimizdeki %15,0'lik uygun donör varlığı dünya ortalamasının (%27,0) altında olup,bu noktada donör bakımının önemi ortaya çıkmaktadır.Uygun donör olarak kabul edilen 31 olgudan 11 donör alıcılara nakledilmiş,ancak bütün donörkriterlerini karşılayan 20 donöründe red edildiği görülmüştür.Bu gruptaki en fazla red nedeni uygun alıcı olmaması, alıcıda enfeksiyon bulguları ve alıcının uzak mesafede olması nedeni ile nakil yapılamamasıdır.LuTx bekleme listesi mümkün olduğunca geniş tutulmalı; her kan grubundan her ebat alıcı nakil için listelenmelidir.Ülkemizde LuTx için Erzurum ve DiyarbakırBKM'den çok az donör çıkmakta olup (Toplam n=7,%3,4) toplumsal bilinçlenme sağlanmalıdır. Toplamda sunulan 206 donörün 11'inin akciğerleri alıcılar için kullanıldığından akciğer kullanım oranı%5,3 olarak hesaplanmış olup gelişmiş ülkelerin altındadır.

Anahtar Kelimeler: Akciğer nakli, donör, beyin ölümü, kan gazı

Sunum Detayları: **SSO-08:** SÖZLÜ SUNUM OTURUMU-8
Tarih ve Saat: 18.10.2015 / 13:30 - 14:30
Salon: SALON T8

- ISHLT uygun donör Akciğer %27
- Çalışmamızda uygun akciğer %15,0
- 2016'de 560 donör,

Akciğer naklinin zorlukları

- Donör kısıtlılığı
  - Kadaverik donörlerde organ kullanılabilirliği
    - Böbrek %98
    - KC % 72
    - Kalp % 59
    - Akciğer %27 (ISHLT)
    - Ülkemizde bu oran %15,0 (Yazıcıoğlu A. Yekeler.E, TÜSAD 37. kongresi sözlü bildiri)

Akciğer naklinin zorlukları

- Canlı donör şansı hemen hemen hiç yok
- Solid organlar içinde
  - İskemi süresi en kısa organlardan biri→ 4-6 h
- Nakil sonrası dış ortama açık tek organ
- Post- Tx, bakteriyel, viral, fungal enfeksiyonların en sık görüldüğü allogreft.

Akciğer naklinin zorlukları

- Donor-Alıcı boyut uyumsuzluğu.
- ECMO/CPB ve heparinizasyon
- Denerve allogreft → Mukosilier aktivite yokluğu → Sekresyon → Pnömoni.
- Soğuk iskemi sonrası MV'nın fiziki travması
- Akciğer ödemi ve mayii dengesi

Akciğer naklinin zorlukları özetle

- A.Bronşialis ☒
- Lenfatik drenajın yokluğu
- Denervasyonun olması
- Dış ortama açıklık

- Dehisens,
- Stenoz
- Plev. Effüzyon
- Ödem
- Mukosilier aktivite kaybı,
- Sekresyon
- Enfeksiyon

Akciğer naklinin zorlukları özetle

En immünosensesitiv allogreft
Sık rejeksiyon

Sık Enfeksiyon

Kronik Rejeksiyon

- 5 yılık survey: %54
- Ort. Survey: 7,1 yıl

Türkiyede İlk Akciğer Nakli

- İstanbul Üniversitesi Çapa Tıp Fakültesi 2004/5 yılında 3 olguya Akciğer nakli yapıldı
- Prof.Dr.Göksel Kalaycı
- Prof Dr. AlperToker

Türkiyede İlk BaşarılıAkciğer Nakli

- Süreyyappaşa Sanatoryum
- İlk akciğer nakli ruhsatı alan merkez
- Mart 2009 yılında ilk başarılı tek akciğer nakli yapıldı
- Silikozis 34 yaş E
- Doç.Dr. C.Asım Kutlu
- Doç.Dr. Erdal Taşçı
- Uzm.Dr.Gül Dabak

Türkiyede İlk Başarılı Çift Akciğer Nakli

Türk Göğüs Kalp Damar Cerrahisi Dergisi
Turkish Journal of Thoracic and Cardiovascular Surgery

Bir olgu, iki ilk: Türkiye'de ilk başarılı çift akciğer transplantasyonu; pediatrik yaş grubunda Türkiye'de ilk akciğer transplantasyonu

One case, two "firsts": first successful double lung and first pediatric lung transplantation in Turkey

Mustafa Özbaran,[1] Kutsal Turhan,[2] Tahir Yağdı,[1] Figen Gülen,[3] Coşkun Özcan,[4] Çağatay Engin,[1] Levent Midyat,[3] Ufuk Çağırıcı,[2] Deniz Nart,[5] Sanem Nalbantgil,[6] Esen Demir,[3] Remziye Tanaç,[3] Fatma Aşkar[7]

Ege Üniversitesi Tıp Fakültesi, [1]Kalp ve Damar Cerrahisi Anabilim Dalı, [2]Göğüs Cerrahisi Anabilim Dalı, [3]Çocuk Sağlığı ve Hastalıkları Anabilim Dalı, [4]Çocuk Cerrahisi Anabilim Dalı, [5]Patoloji Anabilim Dalı, [6]Kardiyoloji Anabilim Dalı, [7]Anesteziyoloji ve Reanimasyon Anabilim Dalı, İzmir

- 8 Nisan 2009
- Ege Üni. KVC ve Göğüs Cerrahisi Kliniği ilk başarılı çift akciğer nakli
- BO, 14 yaş olgu
- Prof.Dr. Mustafa Özbaran
- Doç.Dr.Kutsal Turhan
- Doç.Dr. Figen Gülen

2012 yılı ve ruhsat alan merkezler

2017 Güncel Durum

Faaliyeti iptal olan merkezler	➢ Süreyyapaşa Sanatoryum → 2011 ➢ Yedikule Sanatoryum → 2015 ➢ GATA → 2015 ➢ İstanbul Üni. Çapa Tıp → 2016
Aktif Merkezler	➢ Ankara Yüksek İhtisas Eğt.ve Araş. Hast. ➢ Kartal Koşuyolu Yüksek İhtisas EAH ➢ Ege Üniversitesi ➢ Marmara Üniversitesi ➢ Bakırköy Sadi Konuk EAH
Ruhsat Müracaatında Bulunan Merkezler	➢ Acıbadem Üniversitesi ➢ Yeni Yüzyıl Üniversitesi GOP Hastanesi

Merkezler ve olgu sayıları

Merkez	2004	2009	2010	2011	2012	2013	2014	2015	2016	2017	Toplam
Süreyyapaşa Koşuyolu	-	6	3	5	13	18	12	18	4	2	76+6
Yedikule	-	-	-	-	10	8	12	3	-	-	33
Yüksek İhtisas	-	-	-	-	-	5	6	5	11	1	28
Çapa	3	-	-	-	1	-	2	2	4	-	12
Marmara	-	-	-	-	-	-	1	1	1	-	3
Ege	-	1	-	-	-	-	-	-	2	-	3
GATA	-	-	-	-	-	1	-	-	-	-	1
Toplam	3	7	3	5	24	32	33	29	22	3	**162**

LuTx Hasta Seçimi (ISHLT-2014)

ELSEVIER

The Journal of Heart and Lung Transplantation
http://www.jhltonline.org

ISHLT CONSENSUS

A consensus document for the selection of lung transplant candidates: 2014—An update from the Pulmonary Transplantation Council of the International Society for Heart and Lung Transplantation

David Weill, MD (Committee Chairs),[a] Christian Benden, MD (Committee Members),[c] Paul A. Corris, MD (Committee Members),[d] John H. Dark, FRCS (Committee Members),[d] R. Duane Davis, MD (Committee Members),[e] Shaf Keshavjee, MD (Committee Members),[f] David J. Lederer, MD (Committee Members),[g] Michael J. Mulligan, MD (Committee Members),[h] G. Alexander Patterson, MD (Committee Members),[i] Lianne G. Singer, MD (Committee Members),[j] Greg I. Snell, MD (Committee Members),[k] Geert M. Verleden, MD, PhD (Committee Members),[l] Martin R. Zamora, MD (Committee Members),[m] and Allan R. Glanville, MBBS, MD (Committee Chairs)[b]

İPAH'da Refere Kriterleri

Timing of referral:

- NYHA Functional Class III or IV symptoms during escalating therapy.
- Rapidly progressive disease (assuming weight and rehabilitation concerns not present).
- Use of parenteral targeted pulmonary arterial hypertension (PAH) therapy regardless of symptoms or NYHA Functional Class.
- Known or suspected pulmonary veno-occlusive disease (PVOD) or pulmonary capillary hemangiomatosis.

İPAH'da Listeleme Kriterleri

Timing of transplant listing:

- NYHA Functional Class III or IV despite a trial of at least 3 months of combination therapy including prostanoids.
- Cardiac index of <2 liters/min/m^2.
- Mean right atrial pressure of >15 mm Hg.
- 6-minute walk test of <350 m.
- Development of significant hemoptysis, pericardial effusion, or signs of progressive right heart failure (renal insufficiency, increasing bilirubin, brain natriuretic peptide, or recurrent ascites).[1,61,62]

Adult Lung Transplants
Indications (Transplants: January 1995 – June 2014)

Diagnosis	SLT (N=16,226)	BLT (N=29,457)	TOTAL (N=45,683)
COPD/Emphysema	6,826 (42.1%)	7,856 (26.7%)	14,682 (32.1%)
Idiopathic Pulmonary Fibrosis	5,561 (34.3%)	5,442 (18.5%)	11,003 (24.1%)
Cystic Fibrosis	228 (1.4%)	7,191 (24.4%)	7,419 (16.2%)
Alpha-1	792 (4.9%)	1,667 (5.7%)	2,459 (5.4%)
Idiopathic Pulmonary Arterial Hypertension	91 (0.6%)	1,250 (4.2%)	1,341 (2.9%)
Pulmonary Fibrosis, Other	758 (4.7%)	1,125 (3.8%)	1,883 (4.1%)
Bronchiectasis	65 (0.4%)	1,167 (4.0%)	1,232 (2.7%)
Sarcoidosis	301 (1.9%)	857 (2.9%)	1,158 (2.5%)
Retransplant: Obliterative Bronchiolitis	338 (2.1%)	440 (1.5%)	778 (1.7%)
Connective Tissue Disease	200 (1.2%)	481 (1.6%)	681 (1.5%)
Obliterative Bronchiolitis (Not Retransplant)	110 (0.7%)	381 (1.3%)	491 (1.1%)
LAM	142 (0.9%)	330 (1.1%)	472 (1.0%)
Retransplant: Not Obliterative Bronchiolitis	210 (1.3%)	246 (0.8%)	456 (1.0%)
Congenital Heart Disease	93 (0.6%)	333 (1.1%)	426 (0.9%)
Cancer	7 (0.0%)	30 (0.1%)	37 (0.1%)
Other	504 (3.1%)	661 (2.2%)	1,165 (2.6%)

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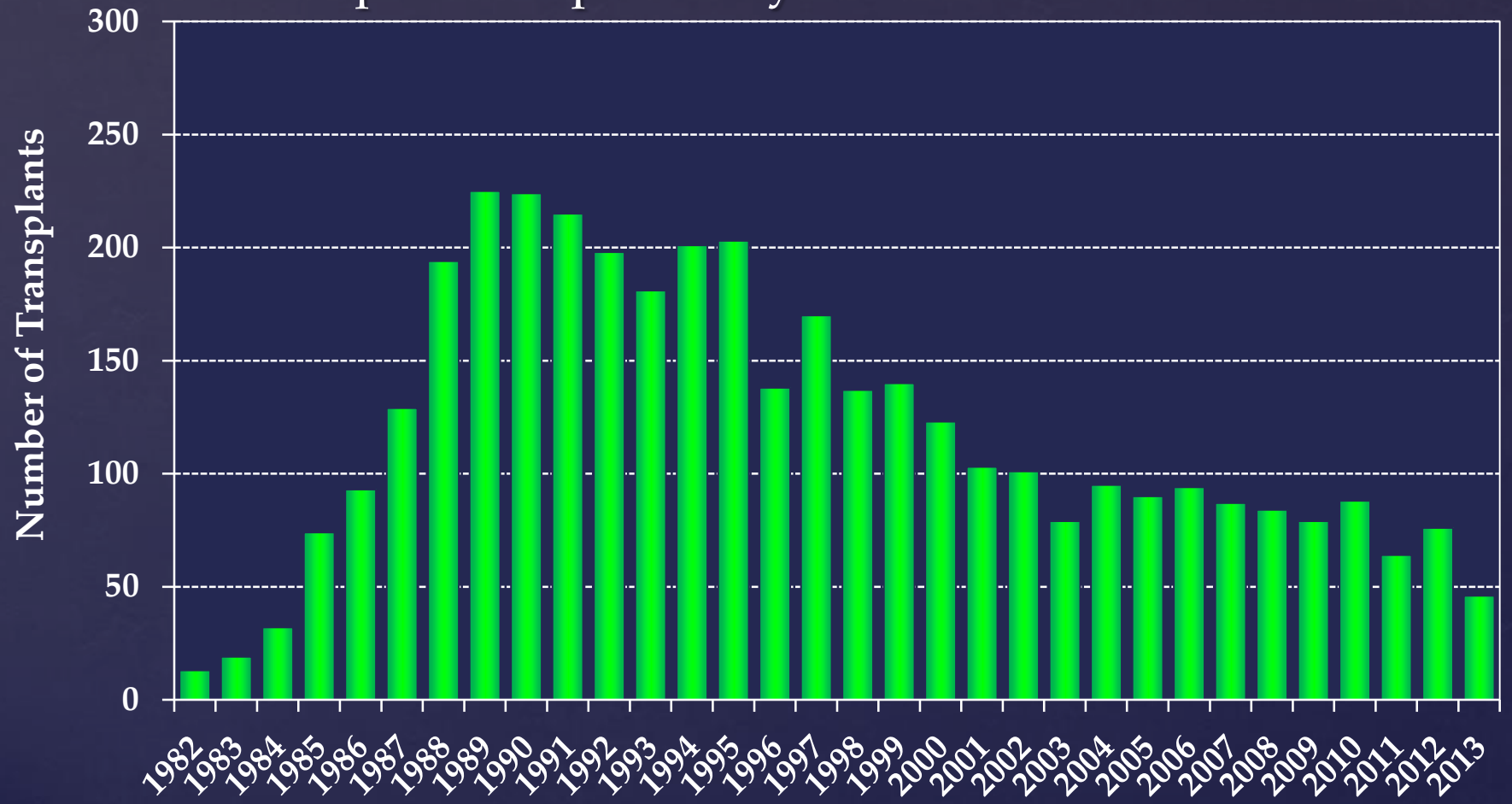
2015
JHLT. 2015 Oct; 34(10): 1264-1277

For some retransplants, a diagnosis other than retransplant was reported, so the total number and percentage of retransplants may be greater.

Adult Heart-Lung Transplants

Number of Transplants Reported by Year



NOTE: This figure includes only the heart-lung transplants that are reported to the ISHLT Transplant Registry. As such, this should not be construed as evidence that the number of heart-lung transplants worldwide has declined in recent years.

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2015

JHLT. 2015 Oct; 34(10): 1264-1277

İPAH'da LuTx

Clin Transplant. 2016 Apr;30(4):357-64. doi: 10.1111/ctr.12692. Epub 2016 Feb 19.

Pulmonary hypertension as a risk factor of mortality after lung transplantation.

Andersen KH[1], Schultz HH[2], Nyholm B[1], Iversen MP[2], Gustafsson F[3], Carlsen J[1].

Author information

Abstract

PURPOSE: Pulmonary hypertension (PH) is recognized as a risk factor in lung transplantation as reflected in the lung allocation score (LAS). We examined the impact of PH on outcome after lung transplantation, with special emphasis on pre- and post-capillary PH.

METHODS: Consecutive lung transplant recipients were evaluated according to ISHLT criteria including right heart catheterization in the period from 1992 to October 2014. Post-transplant survival was assessed according to hemodynamic characteristics: post-capillary PH (mean pulmonary arterial pressure [mPAP] ≥ 25 mmHg and pulmonary arterial wedge pressure [PAWP] > 15 mmHg), pre-capillary PH (mPAP ≥ 25 mmHg, PAWP ≤ 15 mmHg) and non-PH (mPAP < 25 mmHg).

RESULTS: Of 518 transplant recipients, 58 (11%) had post-capillary PH. Pre-capillary PH was present in 211 (41%) and 249 (48%) non-PH. Post-capillary PH and pre-capillary PH were associated with worse 90-d outcomes after transplantation compared to non-PH (p = 0.043 and 0.003, respectively). The negative effect persisted 1 yr post-transplantation in pre-capillary PH (p = 0.037), but not in post-capillary PH (p = 0.447). Long-term survival was unaffected by hemodynamic classification.

CONCLUSION: Post-capillary PH was present in 11% and pre-capillary PH in 41% of the transplant cohort. Post-capillary PH and pre-capillary PH were associated with inferior 90-d survival, but long-term survival was unaffected.

İPAH'da LuTx

Lung Transplantation for Pulmonary Vascular Disease

Eric N. Mendeloff, MD, Bryan F. Meyers, MD, Thoralf M. Sundt, MD, Tracey J. Guthrie, BSN, Stuart C. Sweet, MD, Maite de la Morena, MD, Steve Shapiro, MD, David T. Balzer, MD, Elbert P. Trulock, MD, John P. Lynch, MD, Michael K. Pasque, MD, Joel D. Cooper, MD, Charles B. Huddleston, MD, and G. Alexander Patterson, MD

Division of Cardiothoracic Surgery, Department of Surgery, Divisions of Pulmonary Medicine and Cardiology, Department of Pediatrics, and Division of Pulmonary Medicine, Department of Internal Medicine, Washington University School of Medicine, St. Louis, Missouri

Background. Pulmonary hypertension (PHT) is a lethal condition resulting in markedly diminished life expectancy. Continuous prostaglandin I_2 infusion has made an important contribution to symptom management, but it is not a panacea. Lung or heart-lung transplantation remains an important treatment option for end-stage PHT patients unresponsive to prostaglandin I_2. This study reviews the outcomes after transplantation for PHT in our program.

Methods. A retrospective chart review was performed for 100 consecutive patients with either primary PHT (48%) or secondary PHT (52%) transplants since 1989. Living recipients were contacted to confirm health and functional status.

Results. Fifty-five adult and 45 pediatric patients underwent 51 bilateral lung transplants, 39 single lung transplants, and 10 heart-lung transplants. Mean age was 23.7 years (range, 1.2 months to 54.8 years) and mean pre-transplant New York Heart Association class was 3.2. Pre-transplant hemodynamics revealed a mean right atrial pressure of 9.6 ± 5.4 mm Hg and mean pulmonary artery pressure of 64 ± 14.4 mm Hg. Hospital mortality was 17% with early death predominantly because of graft failure and infection. With an average follow-up of 5.0 years, 1- and 5-year actuarial survival was 75% and 57%, respectively. Mean pulmonary artery pressure on follow-up catheterization was 22 ± 6.0 mm Hg, and mean follow-up New York Heart Association class was 1.3 ($p <$ 0.001 for both compared with pre-transplant). Diagnosis and type of transplant did not confer a significant difference in survival between groups.

Conclusions. Whereas lung or heart-lung transplant for PHT is associated with higher early mortality than other pulmonary disease entities, it provides similar long-term outcomes with dramatic improvement in both quality of life and physiologic aspects.

(Ann Thorac Surg 2002;73:209–19)

İPAH'da LuTx

Interactive CardioVascular and Thoracic Surgery 17 (2013) 166–170
doi:10.1093/icvts/ivt111 Advance Access publication 10 April 2013

BEST EVIDENCE TOPIC – THORACIC

Should we perform bilateral-lung or heart–lung transplantation for patients with pulmonary hypertension?

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Received 12 September 2012; received in revised form 20 January 2013; accepted 26 February 2013

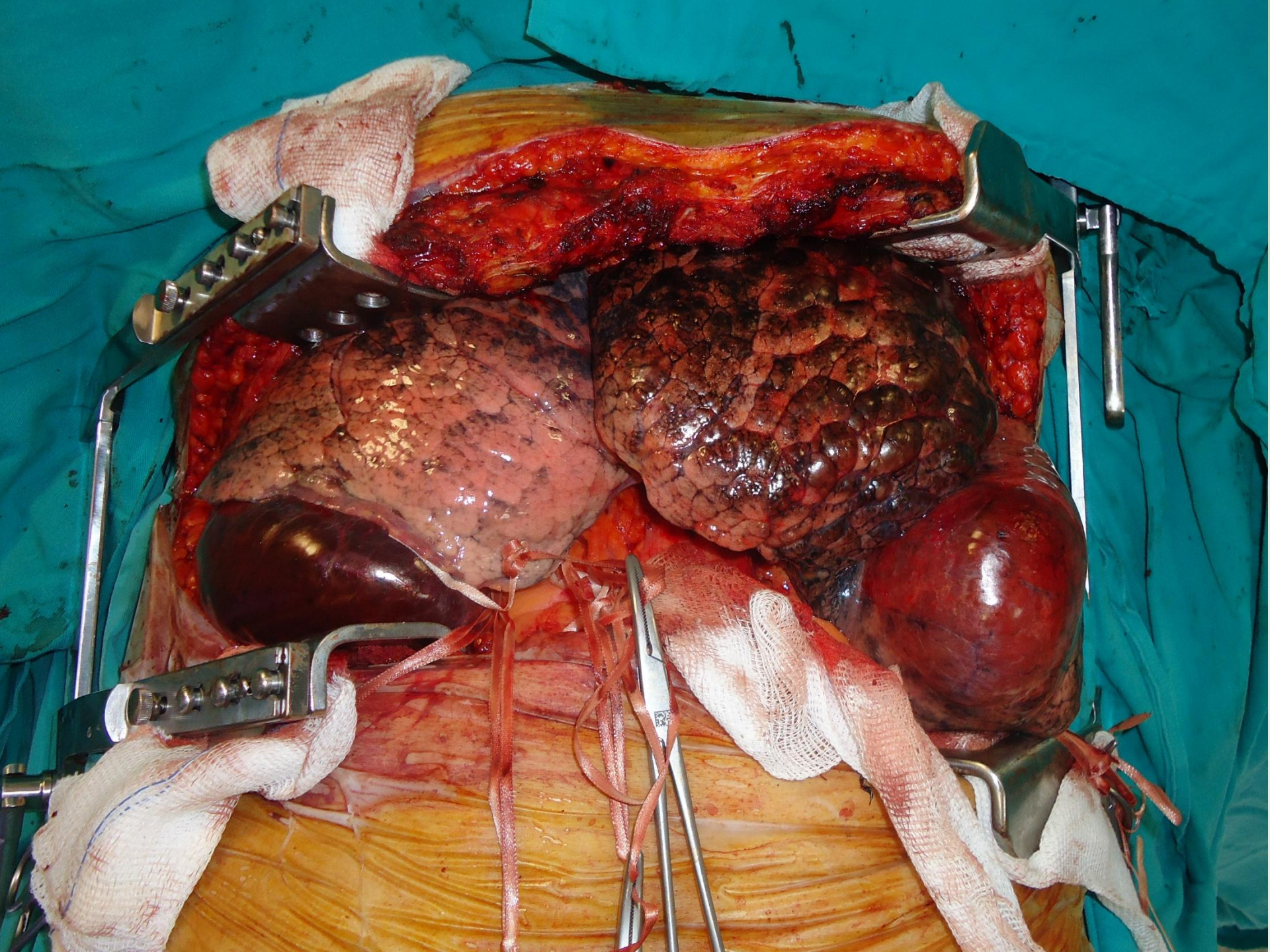
Abstract

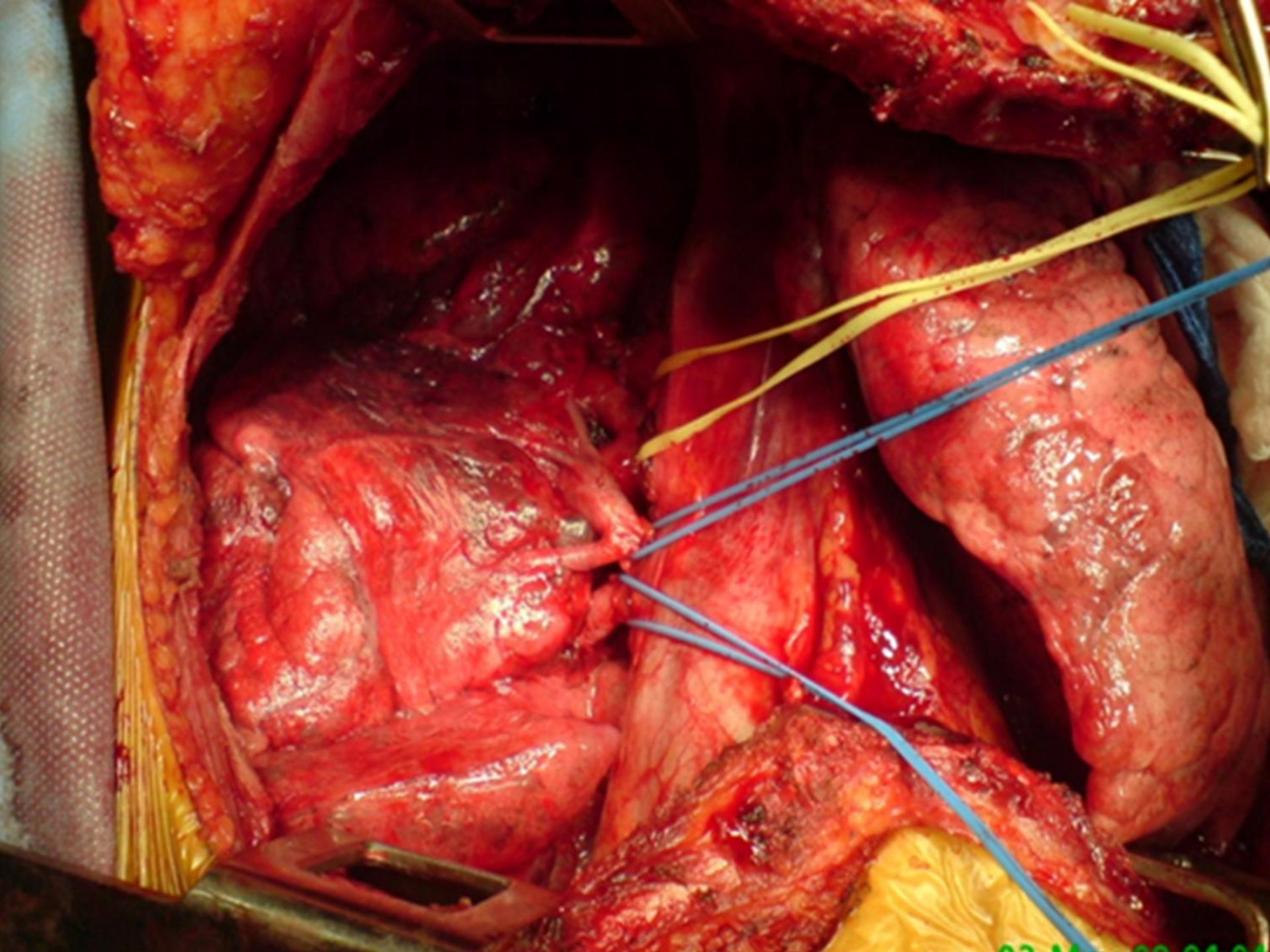
A best evidence topic was constructed according to a structured protocol. The following question was addressed: of the following two procedures, heart–lung transplantation or bilateral-lung transplantation (BLTx), which offers the best outcome for patients with pulmonary hypertension (PH) listed for thoracic transplantation? Of the 77 papers found using a report search for PH and thoracic transplantation, 9 represented the best evidence to answer this clinical question. Overall, 1189 (67%) lung transplantations and 578 (33%) heart–lung transplantations have been reported worldwide for idiopathic PH. For patients with Eisenmenger's syndrome, HLTx represents up to 70% of the transplantation procedures they undergo. On the whole, neither procedure demonstrated an overall survival benefit, when compared with the other. However, PH patients represent a heterogeneous population according to (i) the primary mechanism of PH and (ii) the consequences of PH on right or/and left heart function. With regard to the latter consideration, the current evidence shows that HLTx offers excellent functional and survival outcomes for patients with congenital heart disease and Eisenmenger's syndrome, severe right or/and left heart dysfunction, and who are chronically inotropic dependent. As far as heart dysfunction is concerned, the published evidence approximated cut-off values at 10–25% for the right ventricle ejection fraction (RVEF) and at 32–55% for the left ventricle ejection fraction (LVEF). In the case of lower values for RVEF and LVEF, HLTx should be performed. In all other patients with PH, the evidence demonstrated that BLTx offers a comparable outcome with the advantage of better organ sharing for other recipients. In order to reduce the waiting time on transplantation lists, cardiac repair and BLTx can be offered in experienced centres to patients with simple cardiac anomalies such as atrial septal defect, patent ductus arteriosus or perimembranous ventricular septal defect.

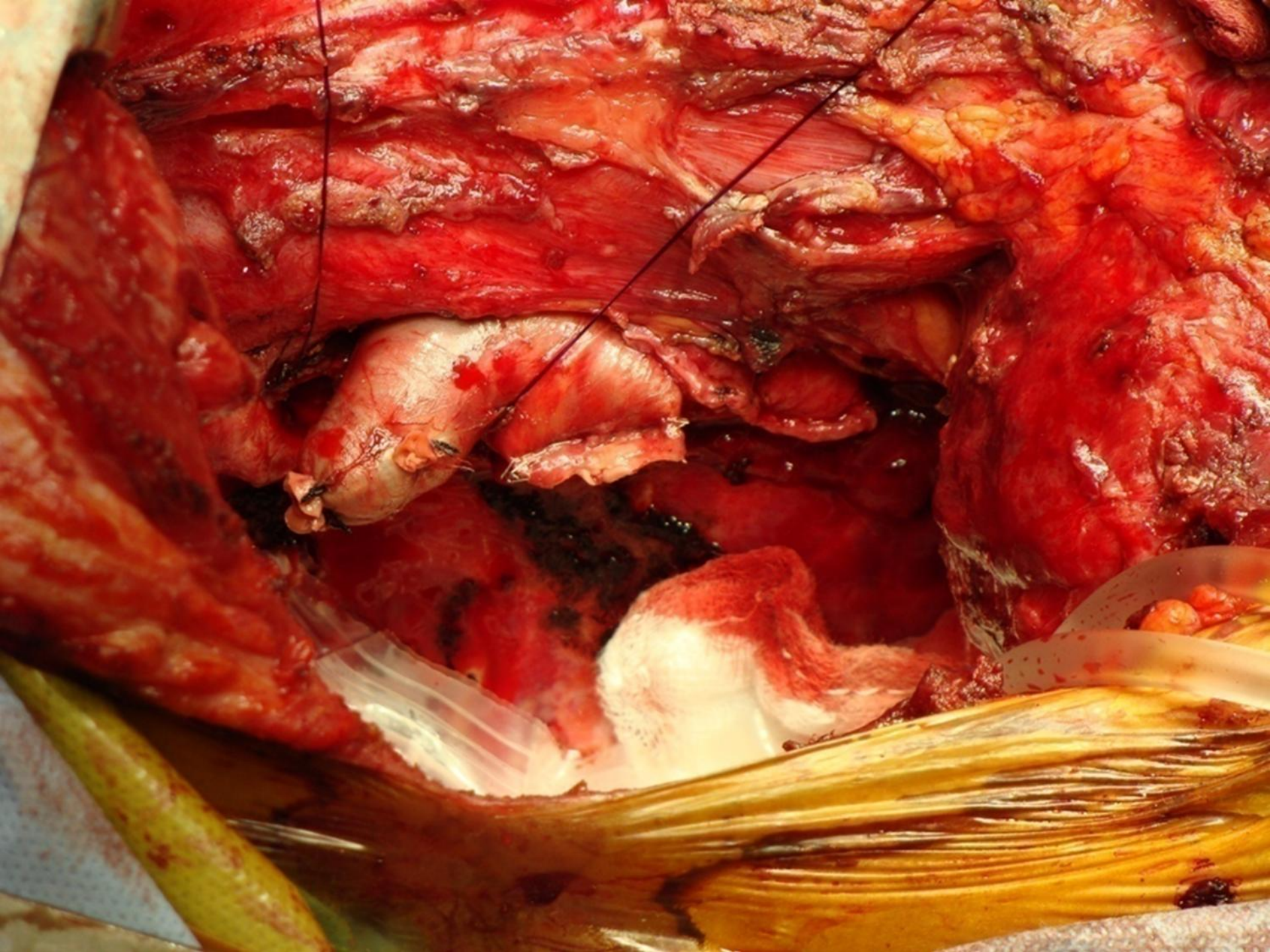
Keywords: Lung transplantation – Perioperative issues and risk analysis – Heart transplantation

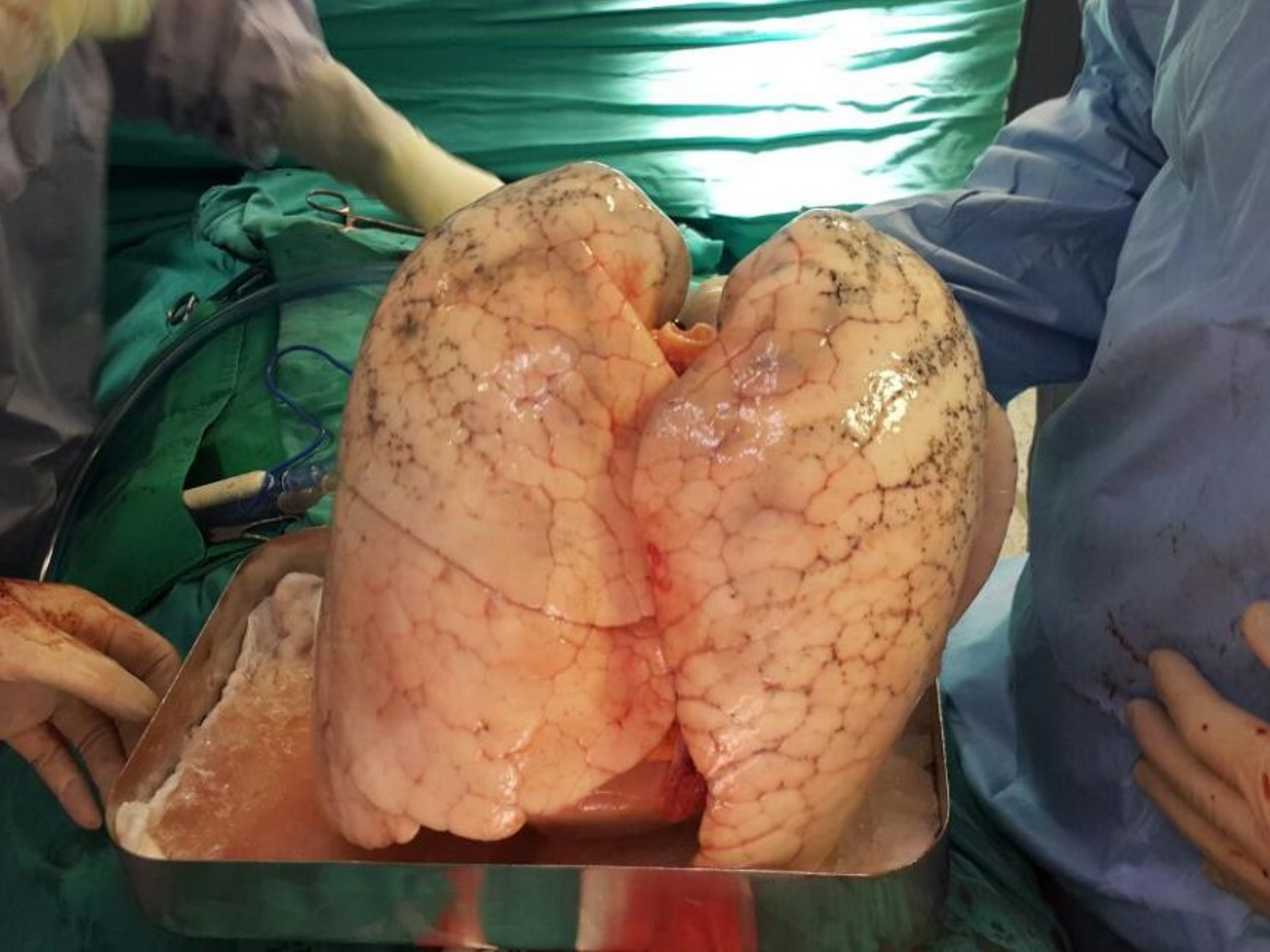
İPAH'da LuTx

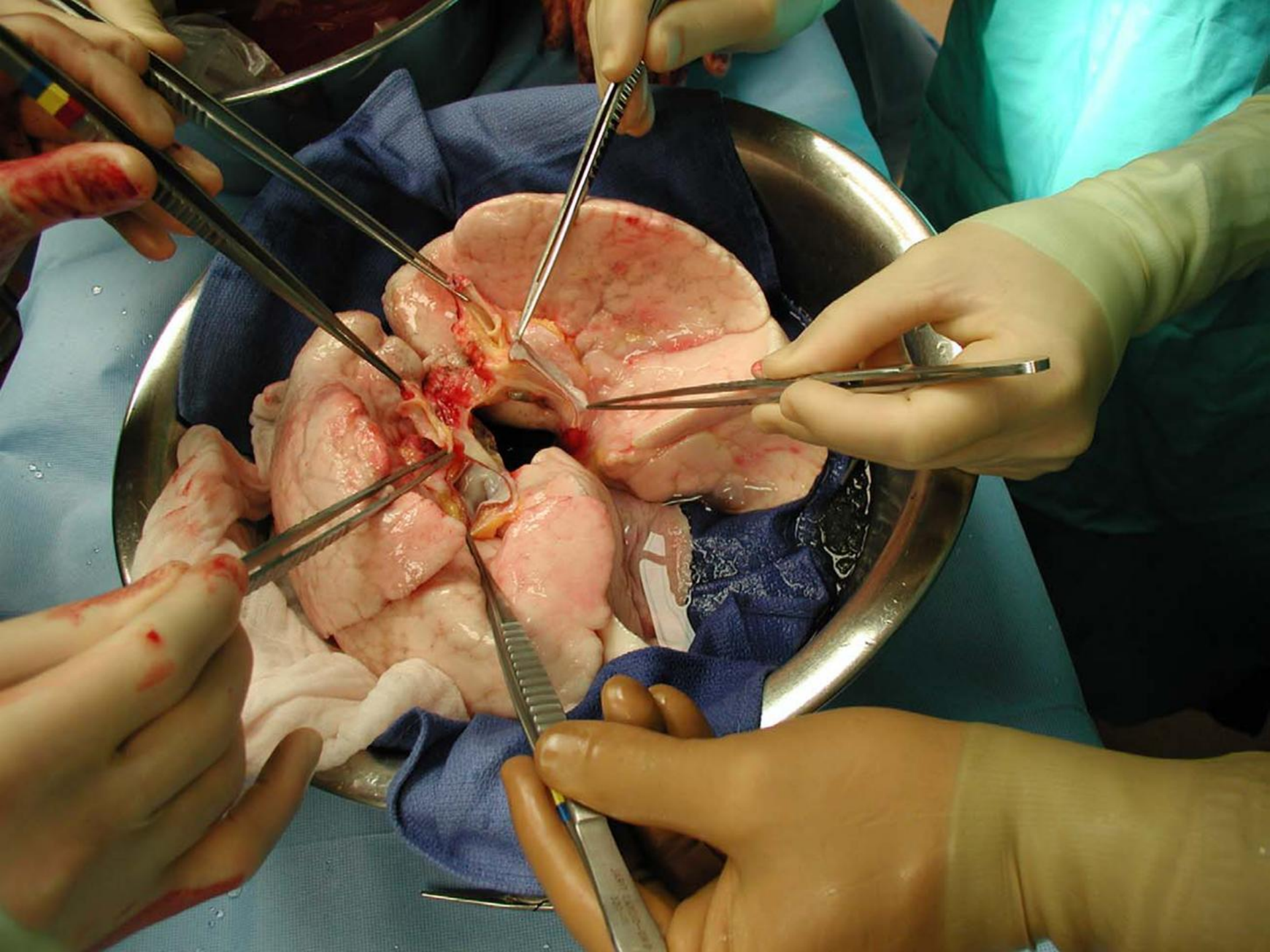
- Mutlak Çift Akciğer Nakli
- İndüksiyonda Arrest İhtimali
- Periferik Femoral ECMO kanülü hazır olmalı
- Santral ECMO
- Pulmoner Kateter, sPAB moniterizasyonu
- İnhale NO veya İV Epoprostenol, İlioprost
- Cerrahide pulmoner arter çap farkı
- Periferik ECMO ile ICU'da takip
- Kardiak re-modelizasyon oluncaya kadar ECMO takibi, 3-5-7 gün

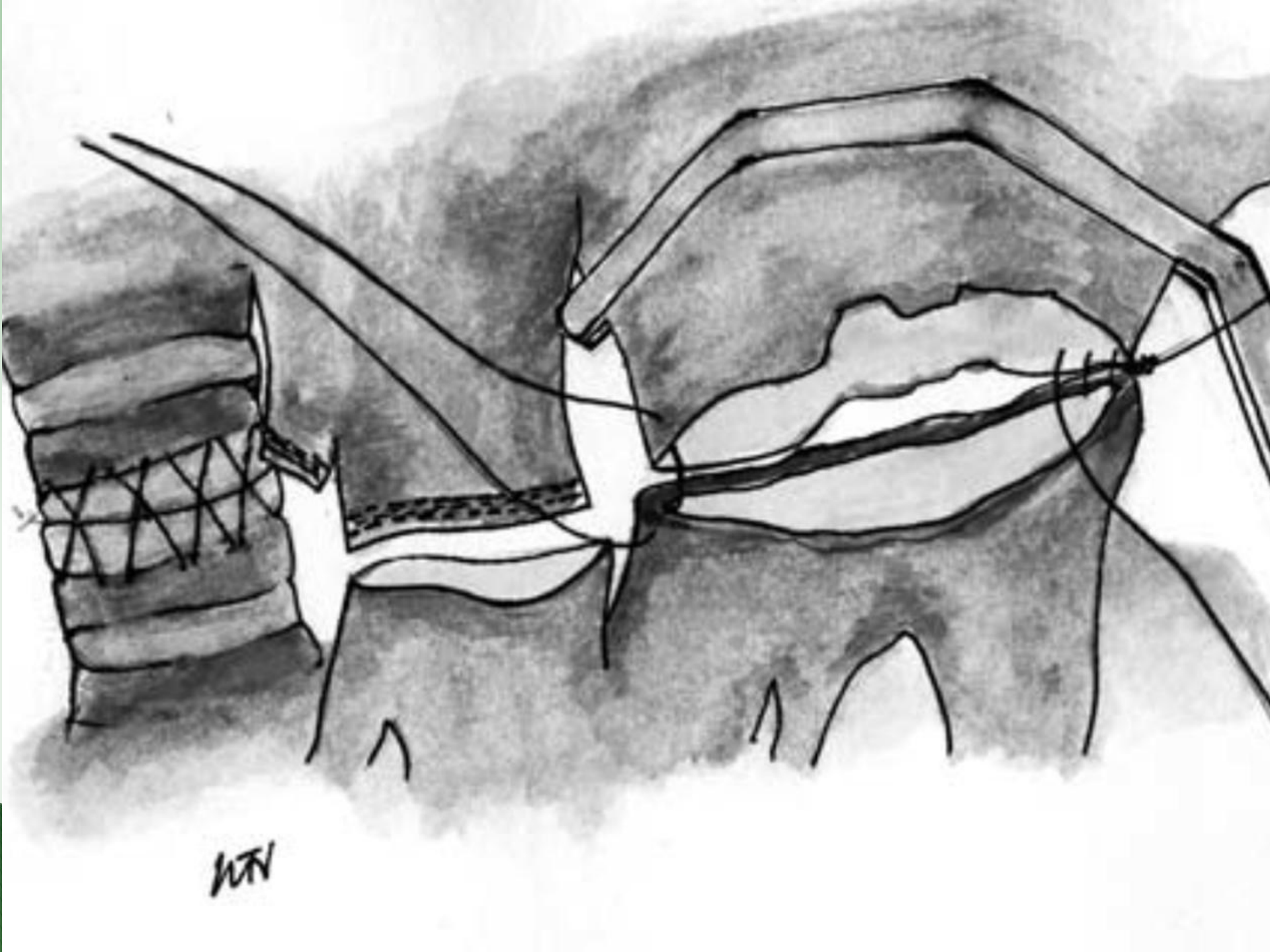


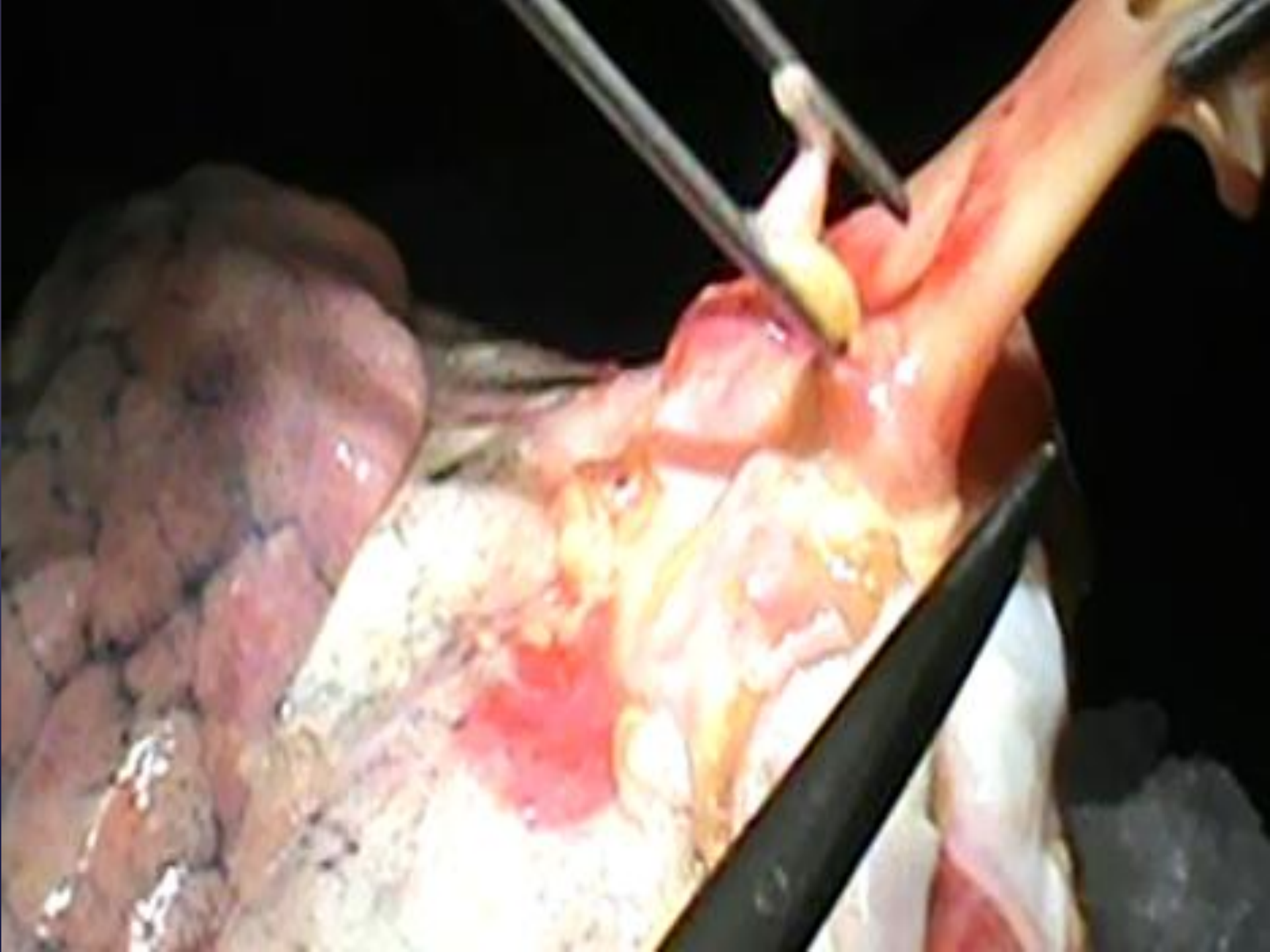


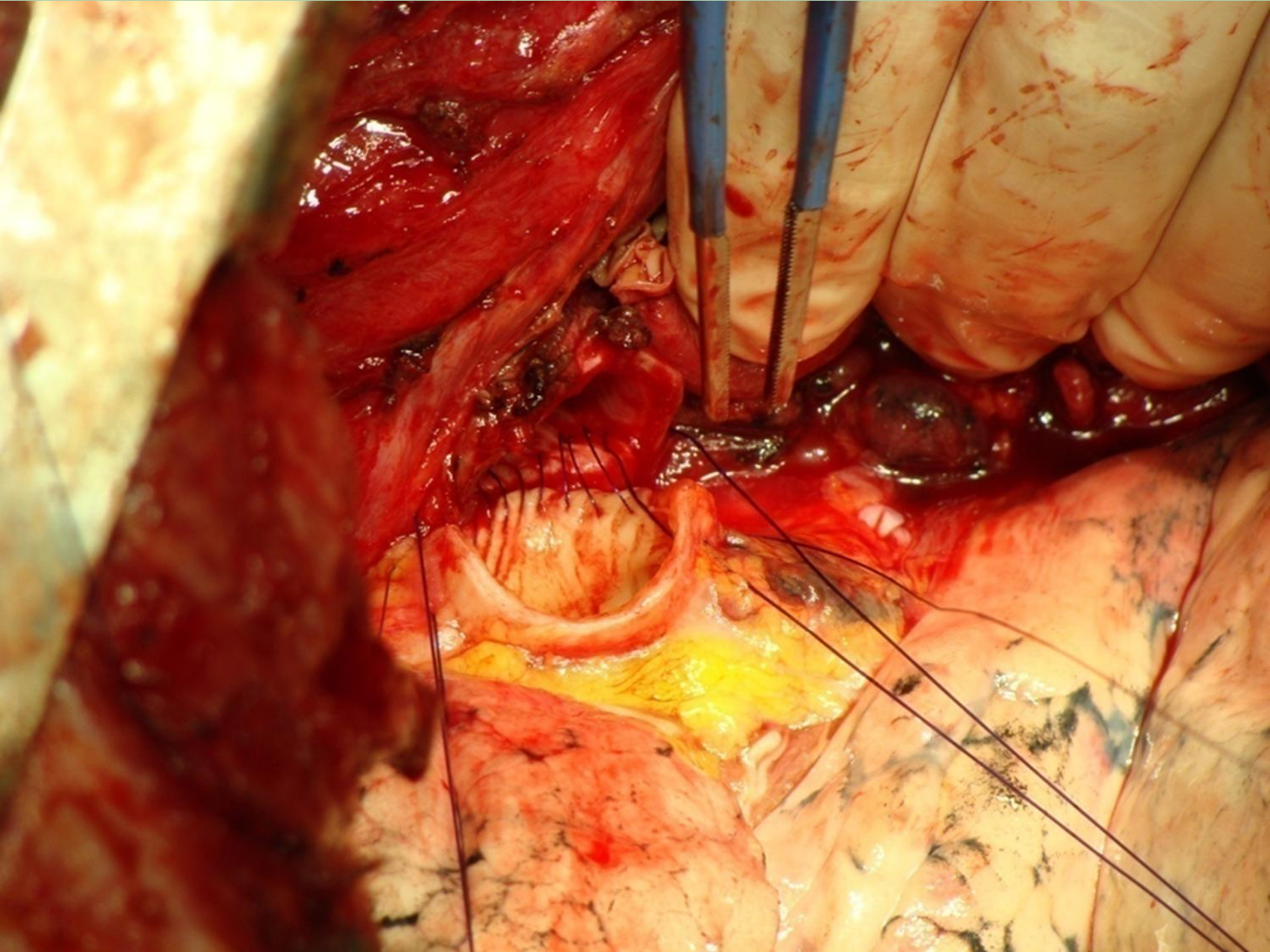


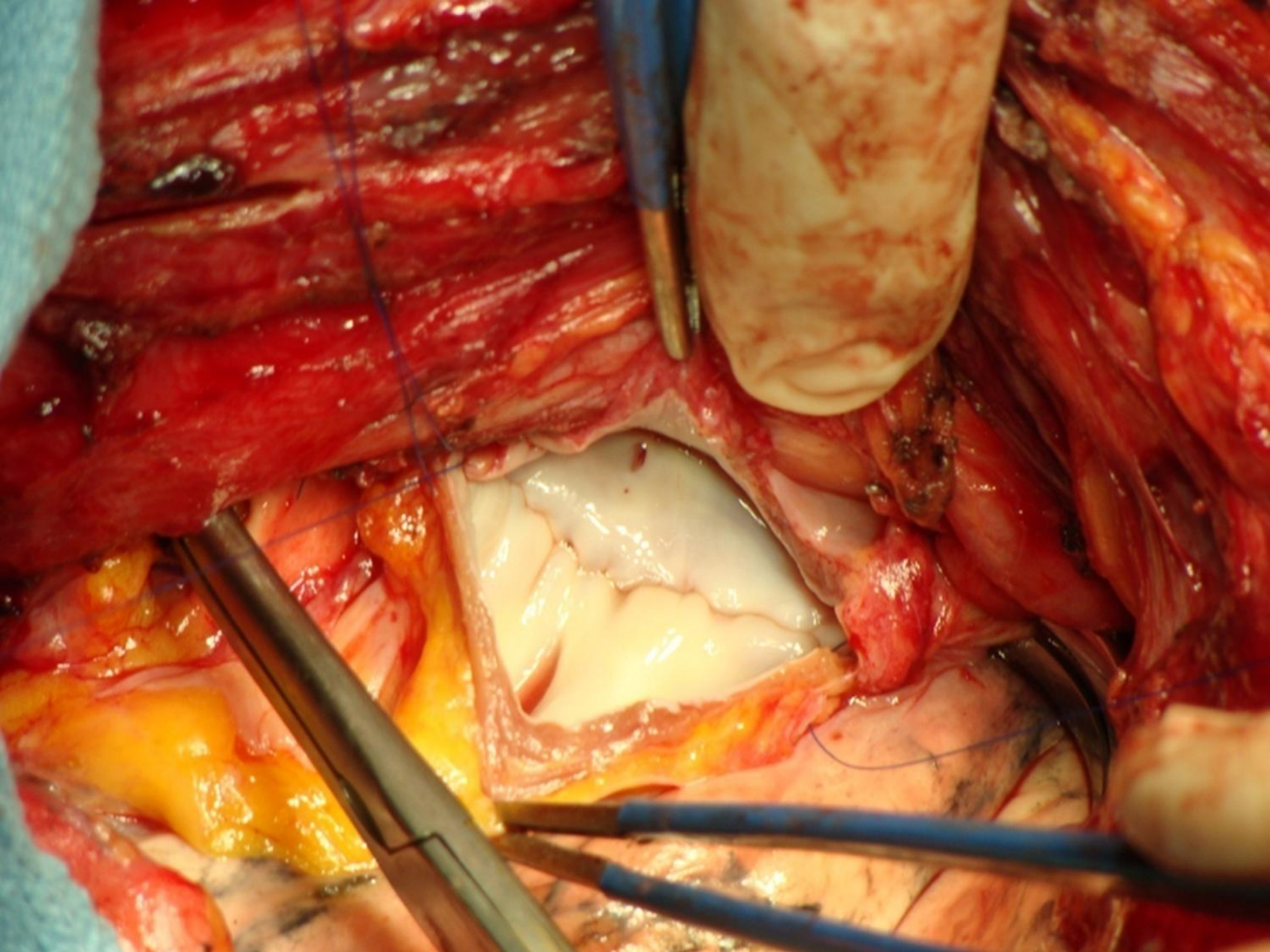


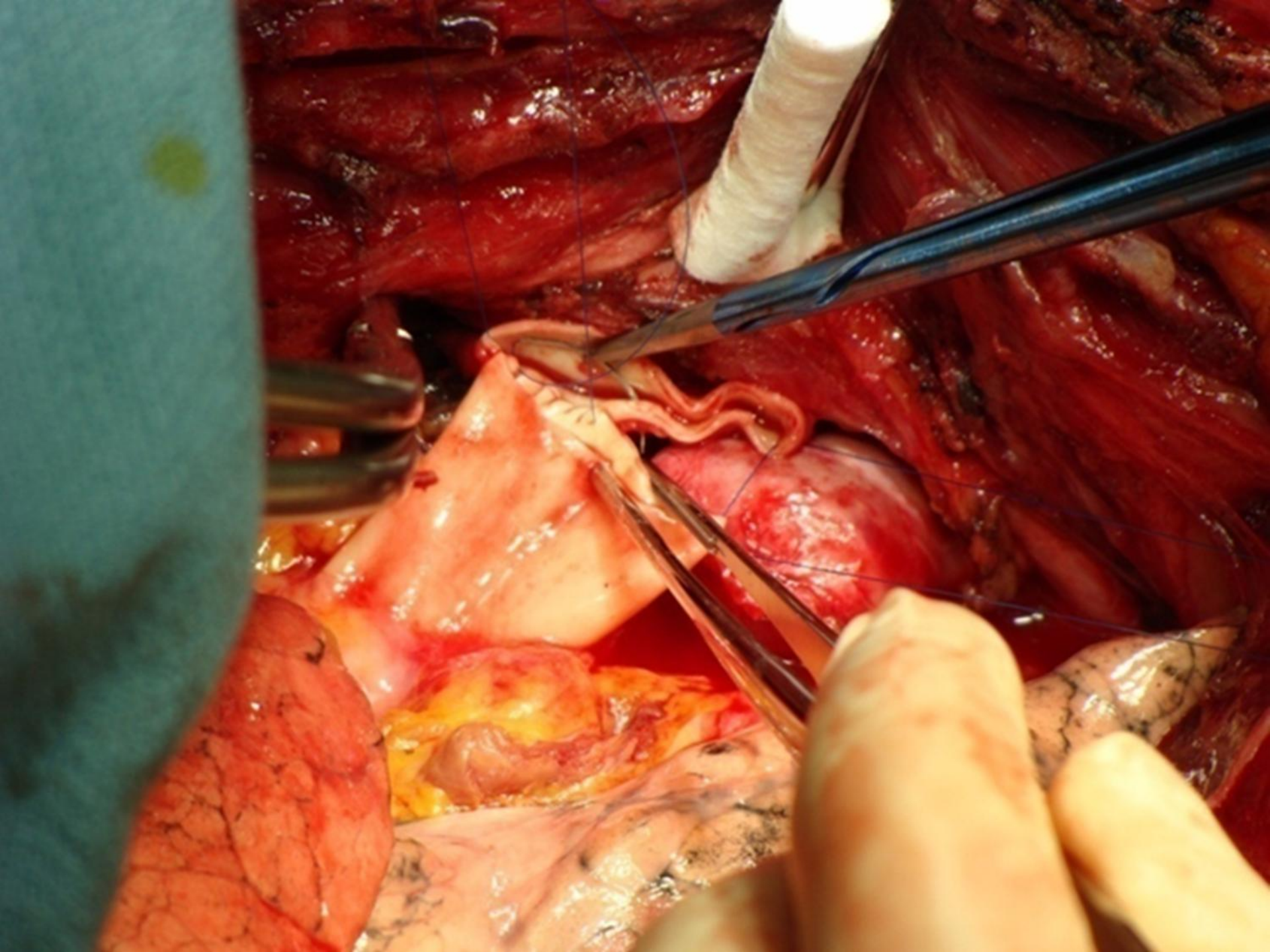


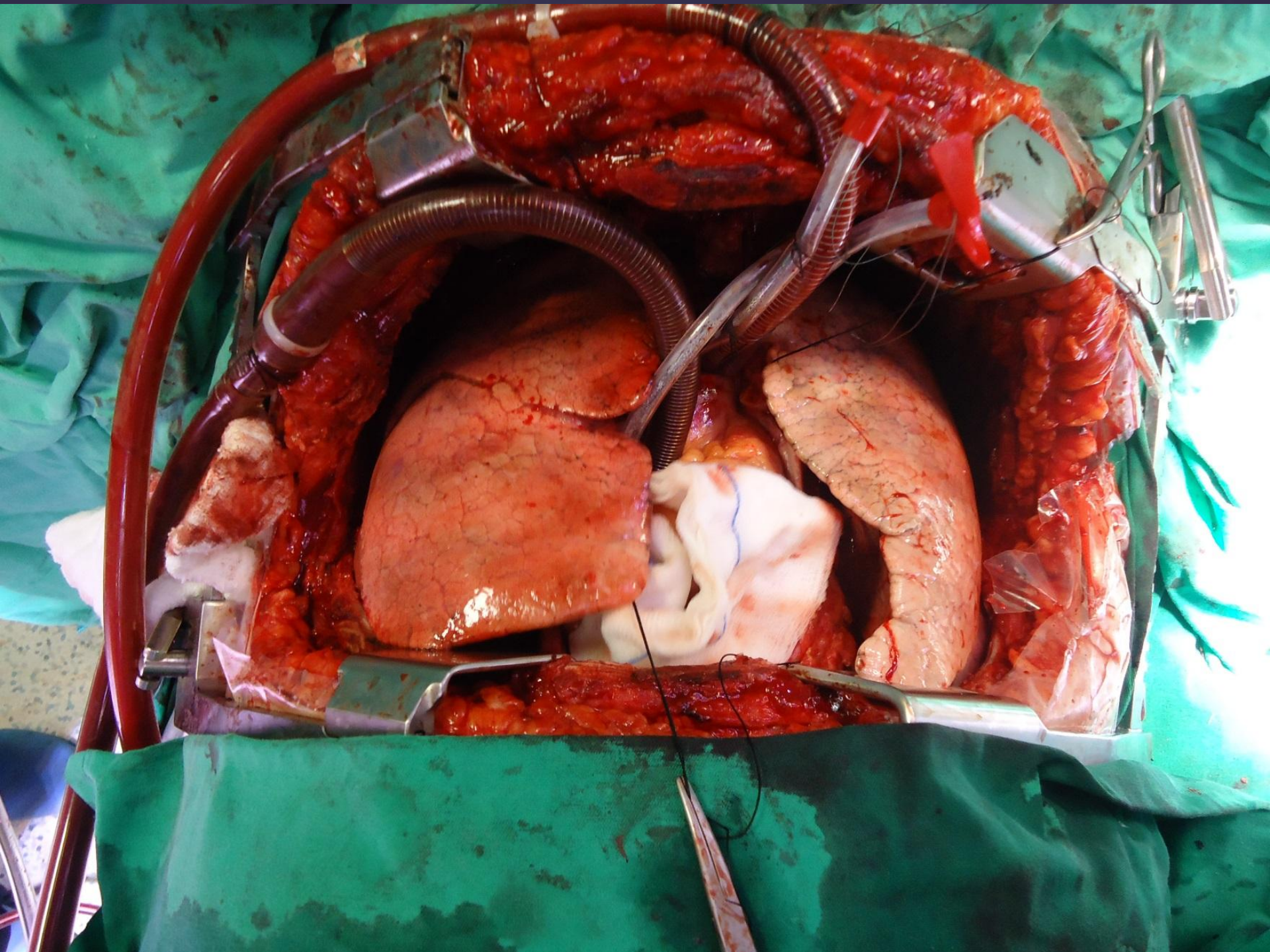




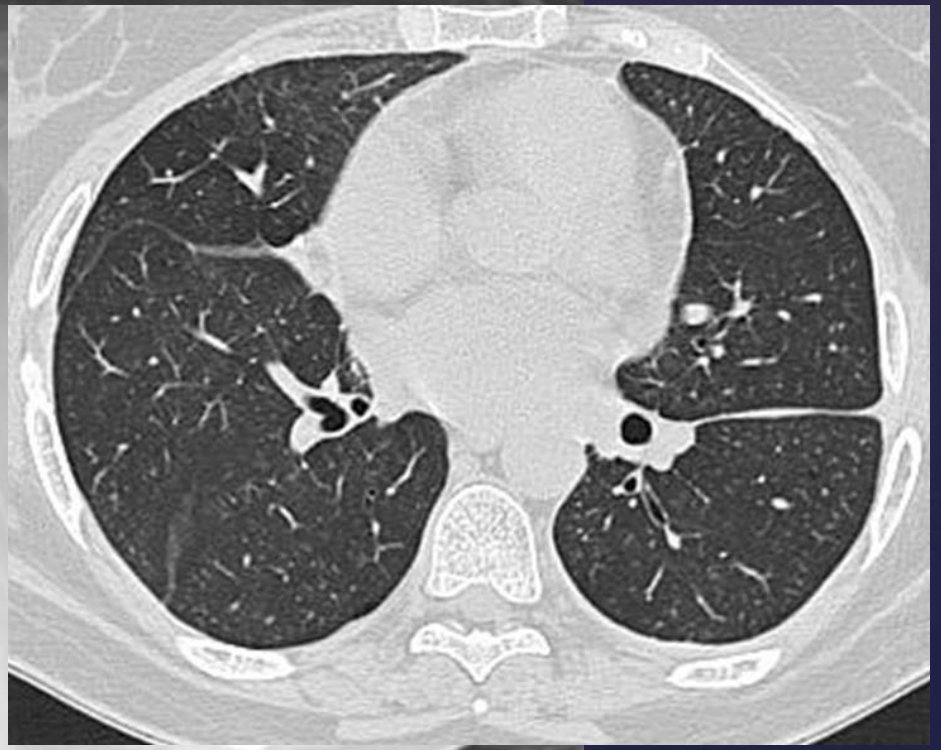








Yüksek İhtisas Verileri



Yüksek İhtisas verileri

- Kasım 2012'de ruhsat aldı
- İlk nakil Mart 2013'de yapıldı
- 2014 Aralık-2015 Eylül dönemi ara verildi

57 yaşında
KOAH
Çift akciğer nakli yapıldı
Hayatta
4. Yılında problemsiz.

Yüksek İhtisas verileri

- Toplam 28 nakil yapıldı
- İlk 90 günlük mortalite…… 4 olgu
- 1 yıllık survey (Conditional)……..%93
- 3 yıllık survey (Conditional) %70.. (ISHLT %64)
- Bekleme listemizde 23 olgu var

	2013	2014	2015	2016	2017	Toplam
Nakil sayısı	**5**	**6**	**5**	**11**	**1**	**28**
SLuTX	-	1	1	1	1	4
DLuTX	5	5	4	10	-	24
Tanı						
KOAH	3	-	3	4	-	10
İPF	-	4	1	2	-	7
Silikozis	-	-	1	2	1	4
Bronşiektazi	-	1	-	1	-	2
Histiyositozis X	2	-	-	-	-	2
Kartagener	-	1	-	-	-	1
Alveolar Prote.	-	-	-	1	-	1
A1AT Eksikliği	-	-	-	1	-	1
İskemi süresi						
1. Akciğer	293 dk **(4 saat 53 dk)** (28 olgu ortala.)					
2. Akciğer	424 dk **(7 saat 04 dk)** (28 olgu ortala.)					
Bekleme Süresi	**162 gün** (28 olgu ort.)					