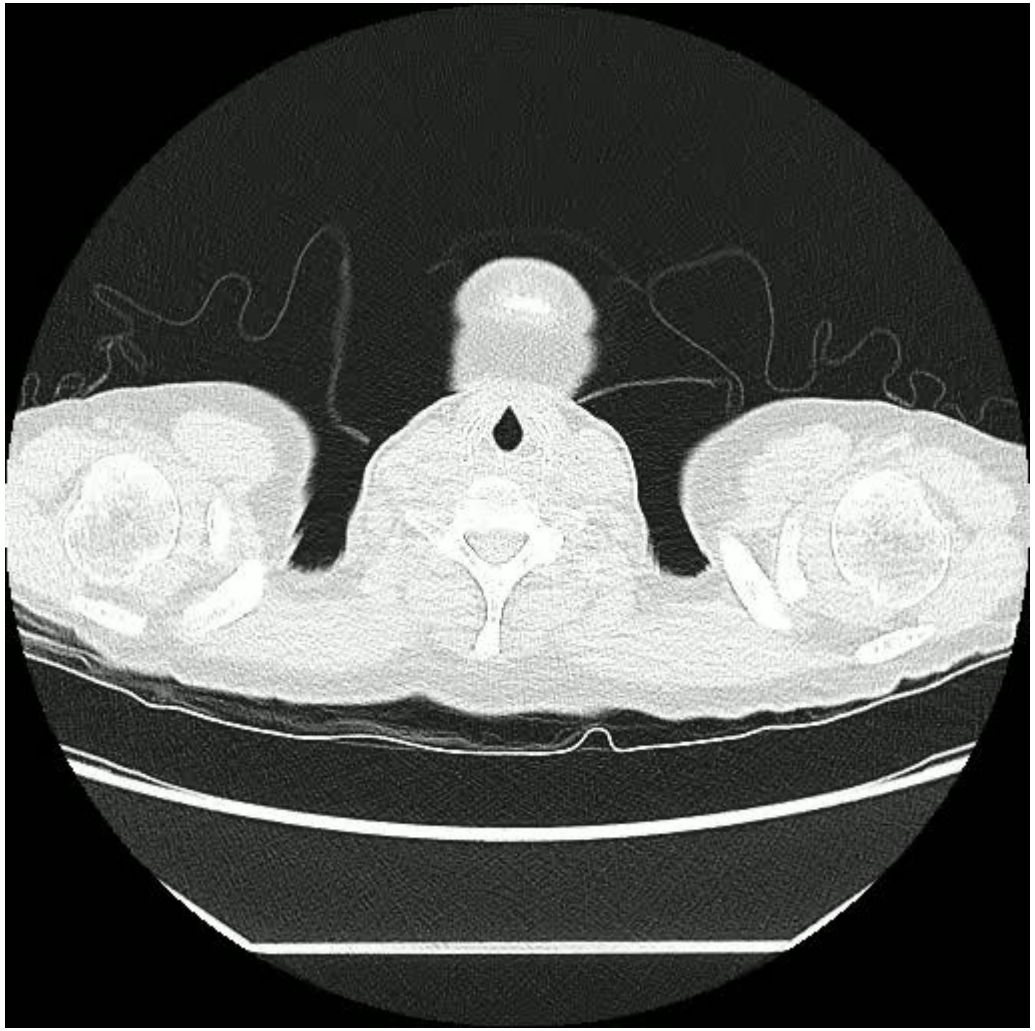
기관지확장증의 수술적 치료

강동경희대학교병원 흉부외과

김대현

F/59
VATS LLL Lobectomy

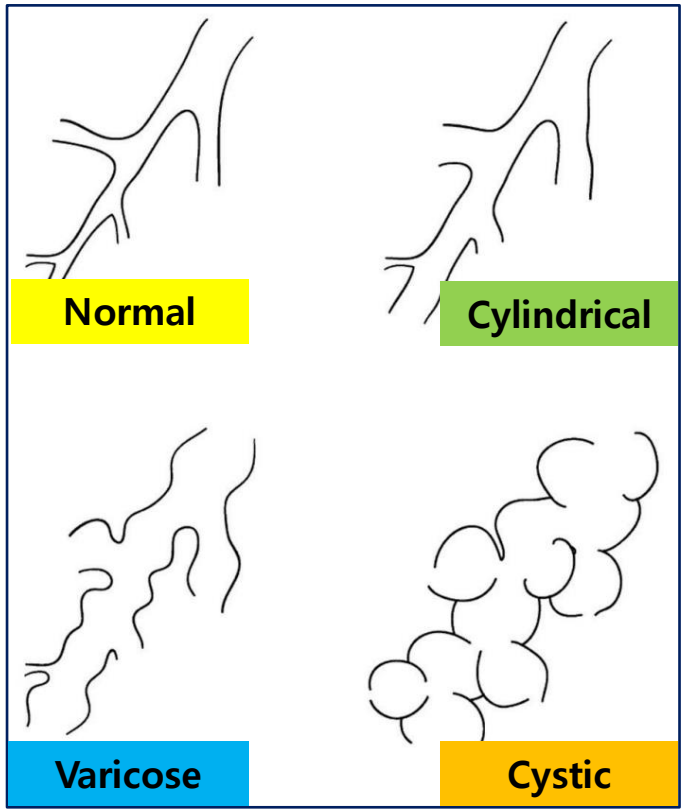
2023-07-05



2024-03-22

Bronchiectasis Surgery

- 흉막 유착 가능성
- 개흉 수술 필요성

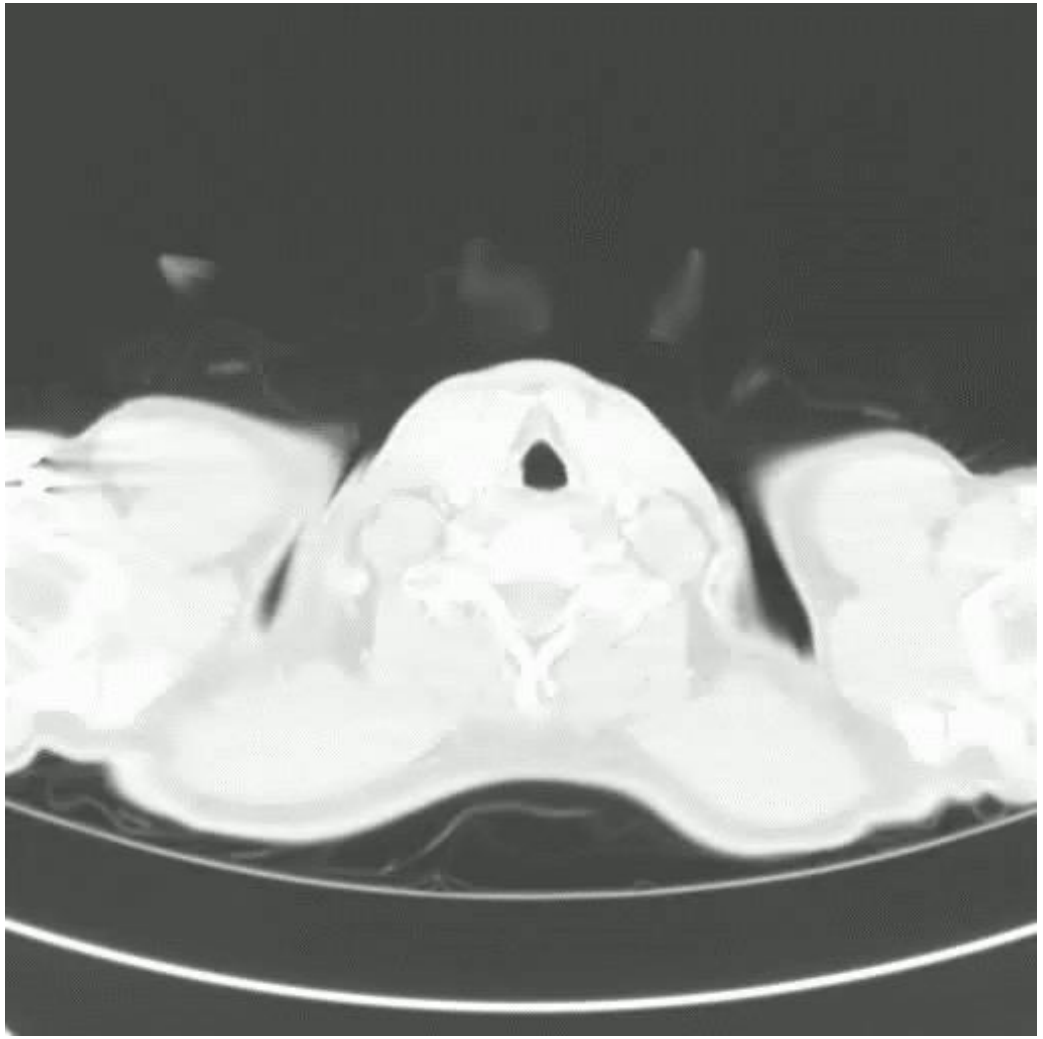


- 합병증 발생 걱정
- 수술 결과는 양호

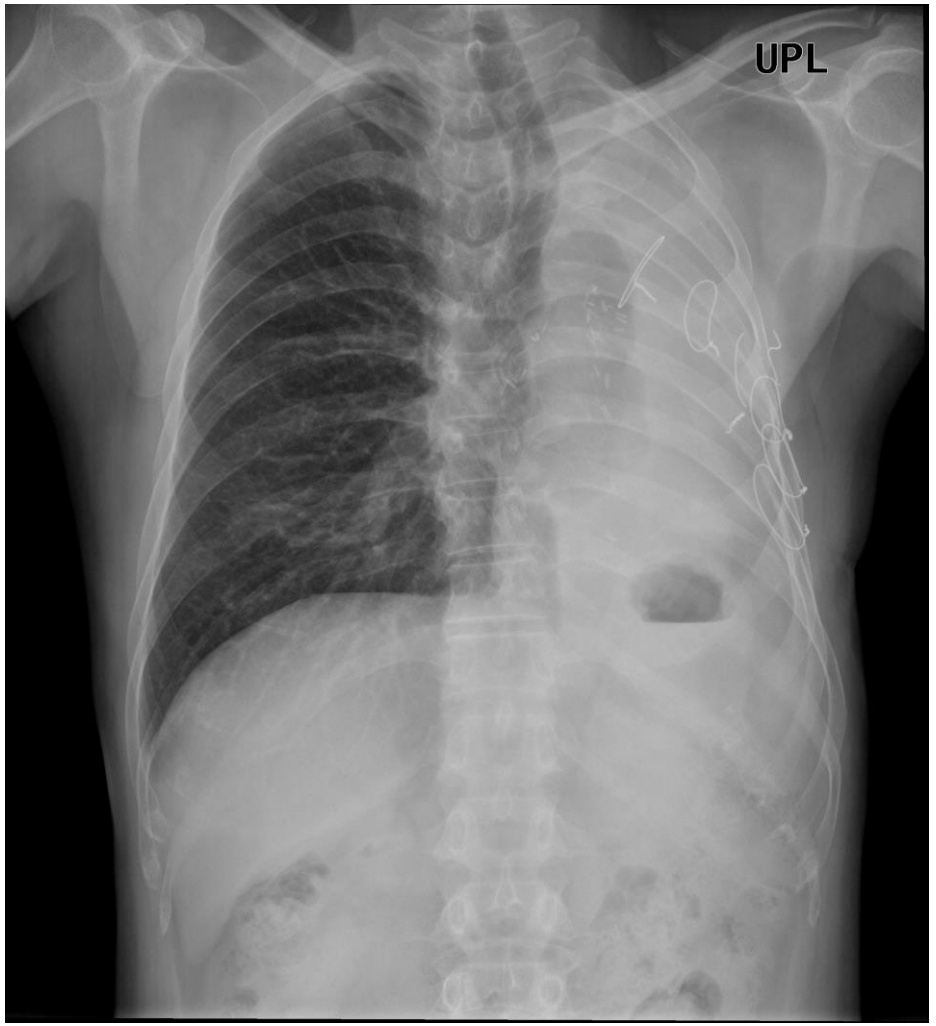
Milestones of Lung Resection

Year	First	Operator	Condition	Location
1895	Pneumonectomy	Macewen	Tuberculosis	Left
1901	Lobectomy	Heidenhain	Bronchiectasis	LLL
1932	Bi-lobectomy	Churchill	Lung Cancer	RML, RLL
1939	Segmentectomy	Churchill Belsey	Bronchiectasis	Lingular

M/49
Lt. Pneumonectomy (2006)
Exploratory thoracotomy for r/o BPF (POD #7)



2006-07-24



2013-03-19

Indications of Surgery

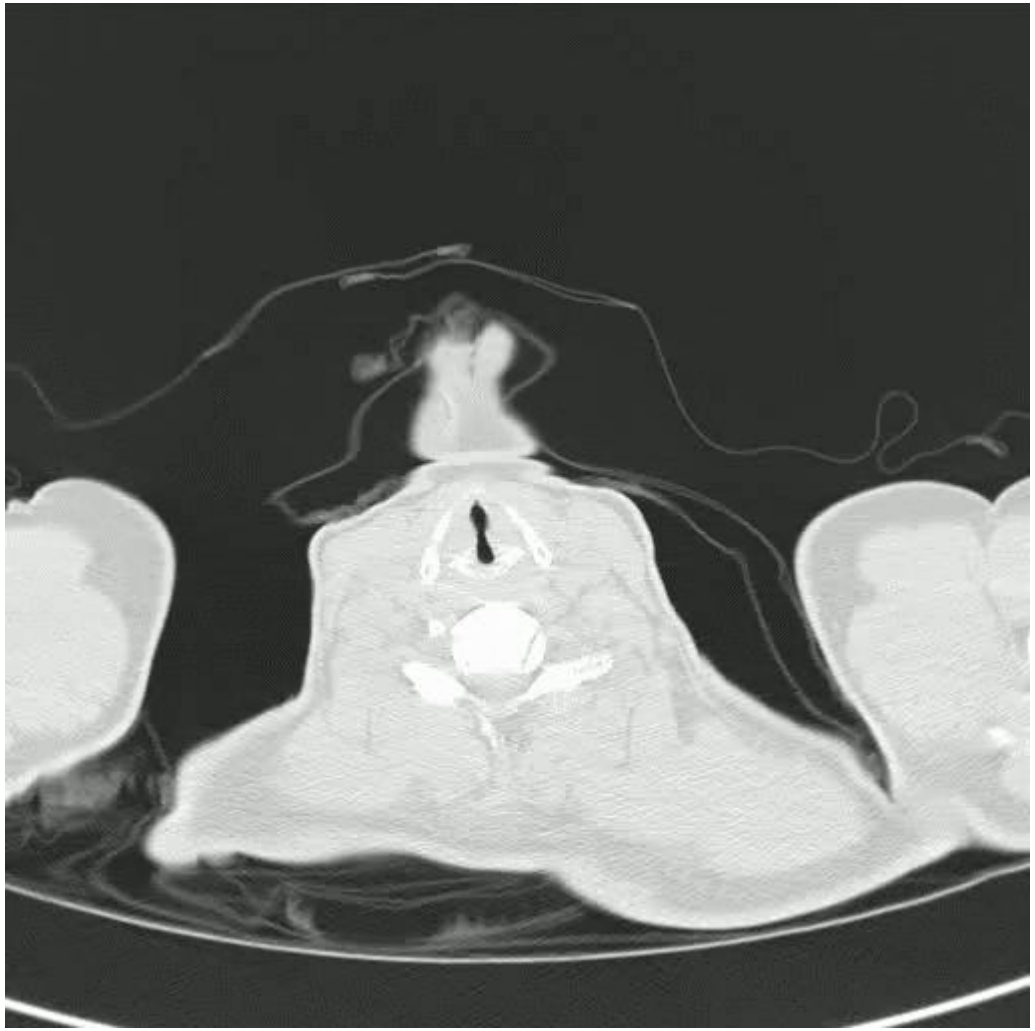
✓ **Failed Medical Therapy**

- **Chronic Cough, Sputum**
- **Frequent Exacerbation**
- **Hemoptysis, Abscess**
- **Destroyed Lung**

✓ **Heterogenous Distribution**

- **Unilateral Localized type**
  → **Best Surgical candidate**
- **Bilateral Localized type**
  → **Prominent Lesion Resection**

F/48
RLL lobectomy (2006)
RUL posterior segmentectomy (2015)



2006-10-16

2015-04-03

수술 관련 국내 논문

1964 이홍균 기관지확장증의 외과적 고찰 (대한외과학회지)
1968 지영신 기관지확장증의 외과적 치료와 그 성적 고찰 (‘’)
1968 대한흉부외과학회 창립
1971 송요준 기관지확장증의 수술요법 (대한흉부외과학회지)
1976 이두연 기관지확장증의 임상적 고찰 (‘’)
1978 송명근 기관지확장증의 외과적 치료 (‘’)
1984 한승세 기관지확장증의 외과적 치료 (‘’)
1990 권영무 기관지확장증의 외과적 치료 (‘’)
1995 정성운 기관지확장증의 임상적 고찰 (‘’)

氣管支擴張症의 外科的考察

1964 이홍균 대한외과학회지
기관지확장증의 외과적 고찰

We have experienced 13 cases of brenchiectasis of which 5 cases were treated surgically and 8 cases were treated medically. The development of diagnostic measures, especially bronchography made the diagnosis of bronchiectasis relatively easy and accurate.

We used Dionosil as contrast material. 5 cases out of 13 had primarily pulmonary tuberculosis in past history. This means that the lung tuberculosis is one of important causative diseases of bronchiectasis in Korea.

The literature reveals that bronchietasis tends to develop early in life, although it may have its at any age. The average age of onset in present series is 19 years old.

The most common site of bronchiectatic lesion was right lower lobe.

I emphasise on routine diagnostic use of bronchography if there is any suspected lesion, particularly to rule out chronic bronchitis conservative prolonged medical care is recommended for those with diffuse tubular bronchiectatic changes and/or accompanying chronic bronchitis.

氣管支擴張症의 外科的治療와 成績

1968 지영신 대한외과학회지
기관지확장증의 외과적 치료와 그 성적

Bronchiectasis, as a chronic lung disorder, still presents problems in selection of patients for operation, the surgical management, and eventual treatment.

Authors studied eighty eight cases who underwent 90 pulmonary resectional operations among 135 patients with a diagnosis of bronchiectasis at chest Surgical Department of N.M.C. during last 7 yrs and 10 months from January 1959 to end of October 1966.

According to the bronchographical distribution of lesions bronchiectasis would fit into following classifcation.

1) Unilateral group; 72 cases.

a) Localized form; 18 〃

b) Diffuse form; 54 〃

2) Bilateral group; 16 〃

In each group typical History, physical findings, plain chest films and, bronchography, and pertinent past History were reviewed.

Seventy two patients with unilateral bronchiectasis underwent 72 pulmonary resectional operations. Sixteen patients with bilateral bronchiectasis underwent 18 pulmonary resectional operations including two cases of bilateral operations.

Ten of 88 patients (11.4%) developed postoperative complications. One of 88 patients (1.14%) expired post operatively.

氣管支擴張症의 外科的治療와 成績

1968 지영신 대한외과학회지
기관지확장증의 외과적 치료와 그 성적

Eighty four of 88 patients were followed up in the out patient clinic for 1 to 5 yrs. Operative results were considered as following.

Complete healing; Cases who became free from symptoms and needed no further medical therapy, and could perform useful activity. 40 among 88 patients (45.4%).

Improved; Cases who were benefitted and could carry on normal activity but who have minimal to moderate cough which required medical therapy. 33 among 88 patients (37.5%).

Poor result; Cases who were obviously not benefitted by operation, continued to have acute flare-ups of infection. 11 among 88 patients (12, 5%).

In 65 patients with all bronchographically demonstrable lesions resected, five (7.7%) showed poor results.

In 23 patients with residual lesions six (26.1%) showed poor results.

M/46
Lt. Pneumonectomy (2008)
s/p BAE (x4)

2008-05-22

2021-08-16

大韓胸部外科學會雜誌 第4卷 第2號
Vol. 4, No. 2. December, 1971

기관지확장증의 수술요법

송요준* · 김정석* · 노준량* · 이영균*

=Abstract=

Surgical Treatment of Bronchiectasis

Yo Jun Song, M.D., Jung Suck Kim, M.D., Joon Rhang Rho, M.D., and Yung-Kyoon Lee, M.D.

Forty-seven cases of bronchiectasis were admitted in this department, of which 38 cases were reviewed. Pulmonary tuberculosis was the most frequent associated disease and encountered in 42% in this series.

Preoperative bronchogram performed in 38 cases revealed left lung involvement in 21 cases, right lung in 14 cases, both lungs in 3 cases, and multilobar involvement in 10 cases.

Various types of pulmonary resection were performed on 32 patients. Complication developed in 3 cases (9.4%). One patient died of intraoperative hypoxia on the second post-operative day. Second case was Complicated with hydrothorax, and third case was with hemothorax.

In 81% of this series, the result was satisfactory and 3 cases (10%) showed slight improvement of symptoms, and 2 cases show no improvement. The mortality rate was 3 per cent (1case).

Ⅴ. 결　　론

1. 본 서울대학병원 흉부외과에서 과거 11년간 기관지 확장증으로 입원하여 치료받은 47예중 조사할 수 있는 38예에 대한 중예보고를 하였다.

2. 기관지확장증의 합병질환으로 폐결핵이 가장 많았고 호발연령은 20대 미만이 79.1%였다.

3. 수술결과는 91%에서 증세의 호전 및 완치를 나타냈고 사망율은 3%였다.

大韓胸部外科學會誌 第9卷 第2號
Vol. 9, No. 2. December, 1976

기관지 확장증의 임상적 고찰*

이 두 연**·조 범 구**·홍 승 록**

=Abstract=

Surgical Consideration of Bronchiectasis An Analysis of 64 Cases

Doo Yun Lee, M.D. Bum Koo Cho, M.D. and Sung Nok Hong, M.D.

During the past fifteen and one half years, a total of 64 cases of bronchiectasis were treated by pulmonary resection.

The diagnosis of bronchiectasis was made relatively easily and accurately with bronchorgaphy.

The average age of onset in the present series was 21 years old.

Preoperative bronchograms were taken in all cases and revealed involvement of the left lower lobe in 14 cases, the right lower lobe in one case, the right upper lobe in 3 cases, the left lower lobe and lingular segment in 9 cases, and multilobar involvement in cases. Bronchographically 18 tubular and II saccular and 2 cystic and 2 saccular and tubular forms were noted.

Various types of pulmonary resection were performed on 59 cases. Complication developed in two cases. One showed pulmonary vein bleeding and was treated completely by reoperation; the other case developed empyema.

Ⅴ. 결 론

1. 연세의대 흉부외과에서 과거 16년간 외과적 수술로 치유한 64예의 기관지 확장증환자중 30세 이하가 57.8% (37예)였다.

2. 과거력에서 폐결핵이 26.6%이며 소아호흡기질환이 15.55%인 점에서 기관지확장증의 발병요인으로 우리나라에서는 결핵관리와 소아의 건강관리가 중요한 것으로 생각된다.

3. 64예중 48예에서 좌측에 병변이 있어 이중 44예에서 하엽절제술, 4예에서 좌측전폐절제술을 시행하였고 우측은 11예로 이중 5예에서 상엽절제술을 시행하였다.

4. 수술사망은 없었으며 합병증으로는 폐정맥의 출혈로 재 개흉한 1예 및 수술후 농흉이 1예 있었다.

大韓胸部外科學會誌 第11卷 第4號
Vol. 11, No. 4, December, 1978

기관지확장증의 외과적치료

송 명 근

=Abstract=

Surgical Treatment of Bronchiectasis

— An analysis of 100 cases —

Myung-Keun Song, M.D.

(Director: Yung-Kyoon Lee, M.D.)

From October, 1968, to September, 1978, 132 patients were admitted in the Department of Thoracic Surgery of Seoul National University Hospital, of which 100 consecutive patients who underwent surgical correction for bronchiectasis were reviewed.

The preoperative diagnosis was made with bronchography.

Treatment with appropriate surgical resection was carried out in all the cases.

Noticeable relief of respiratory symptoms was obtained in 82(82%) of the 100 patients; 9 were improved and 9 were unchanged.

Early postoperative complication was noticed in 12 cases, with 8 mild one.

There was no operative death.

V. 결 론

1. 서울대학교병원 흉부외과에서 지난 10년동안 수술치료를 받은 100명의 기관지확장증 환자에 대한 증례 보고를 하였다.

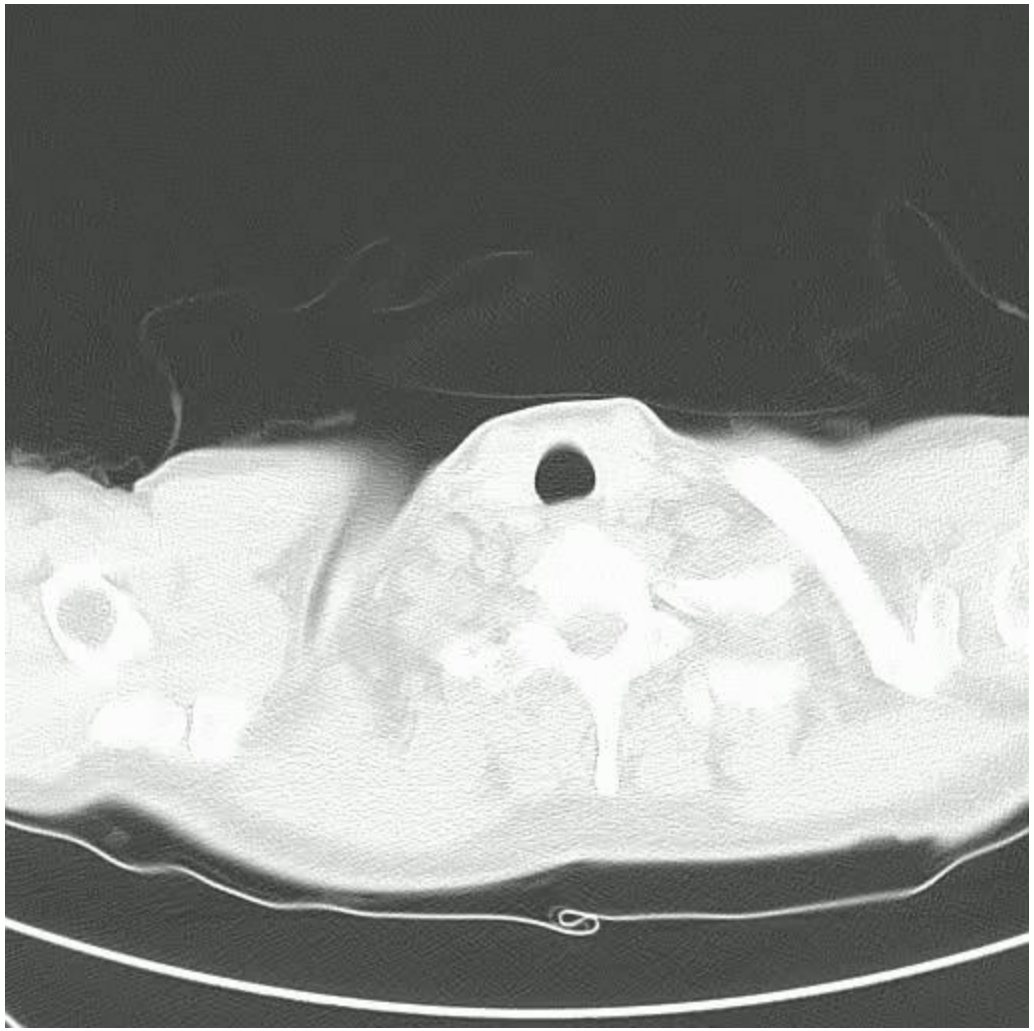
2. 남녀 성비는 6.2 : 3.8로 남자가 많았으며. 호발연령은 20~30세 였으며, 30세 미만이 68%였다.

3. 병인으로는 유아기의 폐질환이 57%로 가장 많았고, 폐결핵이 합병된 예가 23%있었다.

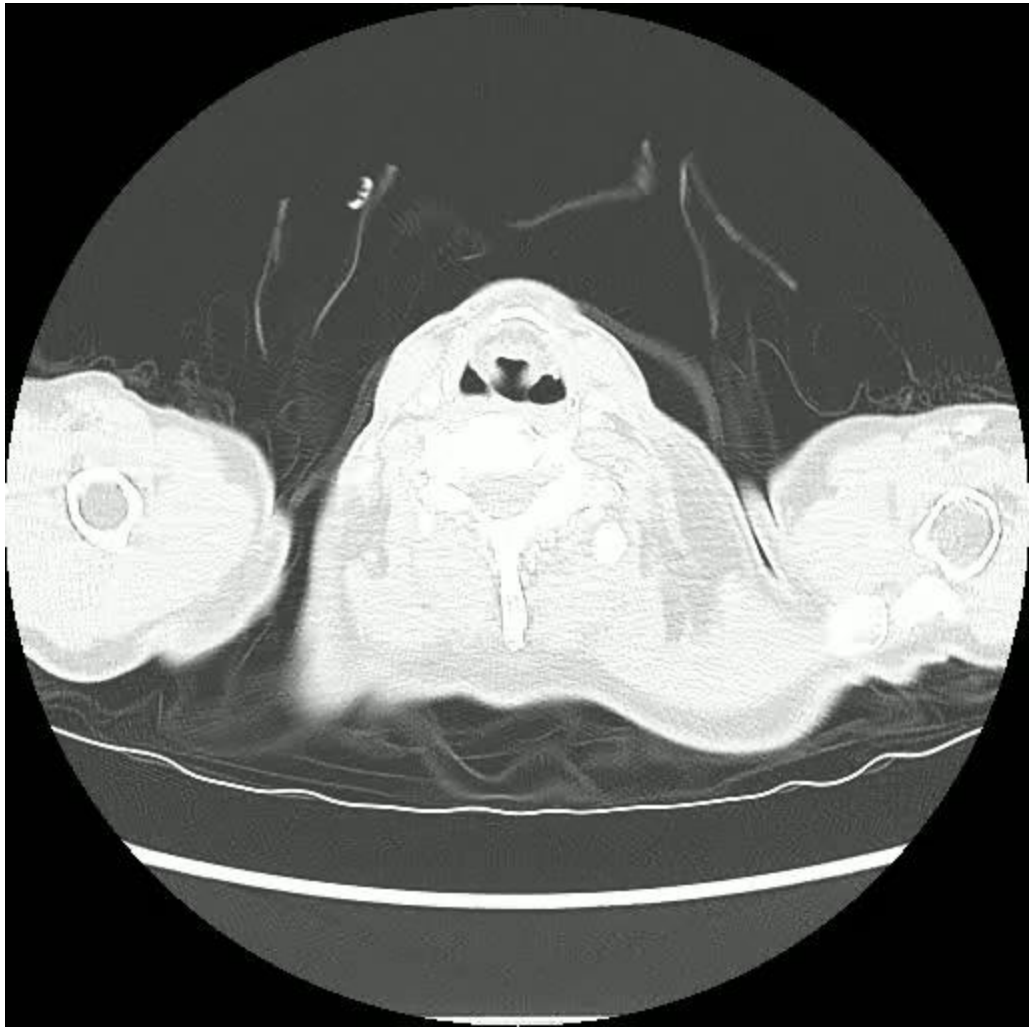
4. 침범부위는 좌측폐가 57.7%, 우측폐가 28.8%, 양측성인 경우가 15.5%였다.

5. 수술결과는 종합 91%에서 호전및 완치를 보였고 일측성의 경우 96.5%의 완치율을 보였으며, 양측성의 경우 60%에서 호전율을 보였다. 사망예는 없었다.

M/48
RLL lobectomy (2009)
LLL lobectomy (2010)



2009-05-31



2022-10-04

大韓胸部外科學會誌 第17卷 第3號
Vol. 17, No. 3, September, 1984

氣管支擴張症의 外科的 治療

한승세*·이정철*·이재성*·송원영*·이성행*

–Abstract–

The Surgical Treatment of Bronchiectasis

Sung Sae Han, Jung Chul Lee*, Jae Sung Lee*, Won Young Song*
and Sung Haing Lee*

要　　約

경북의대 흉부외과학 교실에서 1973년 1월부터 1982년 12월까지 기관지 확장증으로 수술했던 환자중에서 65예를 선택하여 임상적인 분석을 하고 외과적요법의 결과를 관찰해 보았다.

전체 65예 중 남자는 49예였으며, 여자는 16예였는데, 3 : 1 비율로 남자가 많았다. 환자의 연령은 8세에서 51세까지 분포하였으며, 10세에서 39세 사이가 59명으로 91%를 차지하였다.

환자의 임상증상은 기침 83%, 객담 78%, 상기도 감염 51% 및 혈담 37% 순으로 많았다.

환자의 과거력을 보면 홍역 29%, 백일해 14% 및 폐결핵관 기관지염이 각각 12%였다.

기관조영술상 cylindrical 형이 43%를 차지하여 가장 많았다. 폐기능검사상 폐활량 87.8%, 강제호기량 1초치 82.7% 및 최대자발적환기량 73.9%로 다소 감소하여 있었다.

이환폐는 좌측이 52예로서 80%였고, 우측은 13예였다. 좌하엽절제술과 설상구역절제술을 동시에 시행한 경우가 22예로서 34%였는데 가장 많았고, 좌하엽절제술이 단독으로 시행된 경우는 그 다음 순으로 14예로 22%였다. 일부절제술을 시행한 12예에서는 7예에서 만족한 결과를 보였다.

양측절제술은 4예에서 시행하였는데, 2예는 술후 합병증이 없이 완쾌되었고 나머지 2예는 각기 술후에 candida 폐염과 무기폐를 가졌었다.

수술후 합병증으로는 무기폐가 11%, 농흉 9%, 그 외에 술후 출혈, 창상감염, 늑막삼출액 등이 각각 6% 씩이었으며 수술사망율은 1.5%였다.

퇴원후 장기관찰에서 증상이 완전히 없어진 경우는 53%였고, 증상이 호전된 경우는 34%였으며, 13%에서는 증상이 잔존하였었다.

大韓胸部外科學會誌 第 23 卷 第 4 號
Vol. 23, No. 4, August, 1990

기관지확장증의 외과적 치료*

권영무** · 최세영** · 박창권** · 이광숙** · 유영선**

—Abstract—

Surgical Treatment of Bronchiectasis*

Young Moo Kweon M.D., Sae Young Choi M.D.**, Chang Kwon Park M.D.****
Kwang Sook Lee M.D., Young Sun Yoo M.D.****

This study is based on an analysis of 76 cases of bronchiectasis treated by pulmonary resection at the Department of Thoracic and Cardiovascular Surgery, School of Medicne, Keimyung University from September, 1978, to February, 1989.

There were 37 males and 39 females, and their age ranged from 7 to 75 years, with 66 cases (87.7%) between 10 and 39 years.

The past history included measles(36.8%), frequent URI(26.3%), pulmonary tuberculosis(23.7%), and pneumonia or bronchitis(21.1%). The main clinical symptoms were cough(90.8%), purulent sputum(88.2%), hemoptysis(64.5%).

The preoperative diagnosis was made by bronchography. Thirty-five cylindrical, 16 cystic, 1 varicose and 20 mixed types of bronchiectasis were noted.

The majority of the cases had disease in the dependent portion of the lung.

Various types of pulmonary resection were performed. Early complications developed in 10 cases(13.2%), but no operative death. The follow-up ranged from 10 months to 137 months. In 57 cases having resection of all bronchiectatic lesion, 48(84.2%) had excellent or improved conditions, but 5(8.8%), unchanged. In 19 cases whom not all demonstrable disease removed, 14(73.7%) had excellent or improved conditions, but 3(15.8%), unchanged.

요 약

계명대학교 의과대학 흉부외과학 교실에서 1978년 9월부터 1989년 2월까지 기관지확장증으로 수술하였던 76례를 대상으로 임상적인 분석과 수술결과를 비교분석하여 다음과 같은 결과를 얻었다.

전체76례중 남자는 37례, 여자는 39례였으며, 연령은 7세에서 75세까지 분포하였고, 20대에서 가장 높은 빈도를 보였다.

증상은 기침(90.8%), 농성 객담(88.2%), 객혈(64.5%)의 순이었으며, 과거력은 홍역(36.8%), 빈번한 상기도염(26.3%), 폐결핵(23.7%)의 순으로 많았다.

이환폐는 좌측이 69.7%, 우측이 19.7%, 양측성인 경우가 10.5%를 차지하였으며, 좌하엽과 설상구역을 동시에 침범한 경우가 31.6%로 가장 많았다.

수술은 57례에서 완전절제를, 19례에서는 부분절제를 시행하였고 술후 조기 합병증은 10례에서 발생하였으며 수술 사망례는 없었다.

장기추적 관찰한 결과, 완전절제술군에서는 84.2%에서 호전 또는 완치를 보였고 8.8%에서는 무변화였으며, 부분절제술군에서는 73.7%에서 호전 또는 완치를, 15.8%에서 무변화를 보였다.

기관지확장증의 임상적 고찰

정 성 운* · 정 황 규*

=Abstract=

Clinical Evaluation for the Bronchiectasis

Sung Woon Chung, M.D.*, Hwang Kiw Chung, M.D.*

We managed 80 patients of bronchiectasis from Jan. 1983 to Dec. 1992 admitted to the department of Thoracic and Cardiovascular Surgery, Pusan National University Hospital. We evaluated clinically these patients and summarized as follows.

The preoperative final diagnosis was made by bronchography and HRCT. In the image study saccular type bronchiectasis was 47.1%, cylindrical 27.5%, mixed 17.6% and varicose 7.8%. Anatomically left side involvement was more frequent than the right as 61.2% to 38.8% and the most commonly invading lobar area was left lower. Alpha-hemolytic streptococcus was the most commonly found bacterial strain in microbial study. For the conservative treatment, first generation cefalosporins, aminoglycosides and ampicillin were used as antibiotic therapy in this order of frequency. Reversibility of clinical symptoms after conservative treatment for all the types of bronchiectasis was 100%. Surgical treatment were done in 50 cases, among these, left lower lobectomy was 38.0%, left lower lobectomy with ligular segmentectomy 22.0%, left pneumonectomy 10.0%, right middle and lower bilobectomy 16.0%, right lower lobectomy 10.0%, right pneumonectomy 4.0%. In 10 cases, there remained some lesion in the other areas of lung parenchyme after first attempt surgical resection because the distribution of lesion is too broad to resect out in single thoracotomy hoping improvement by medical management.

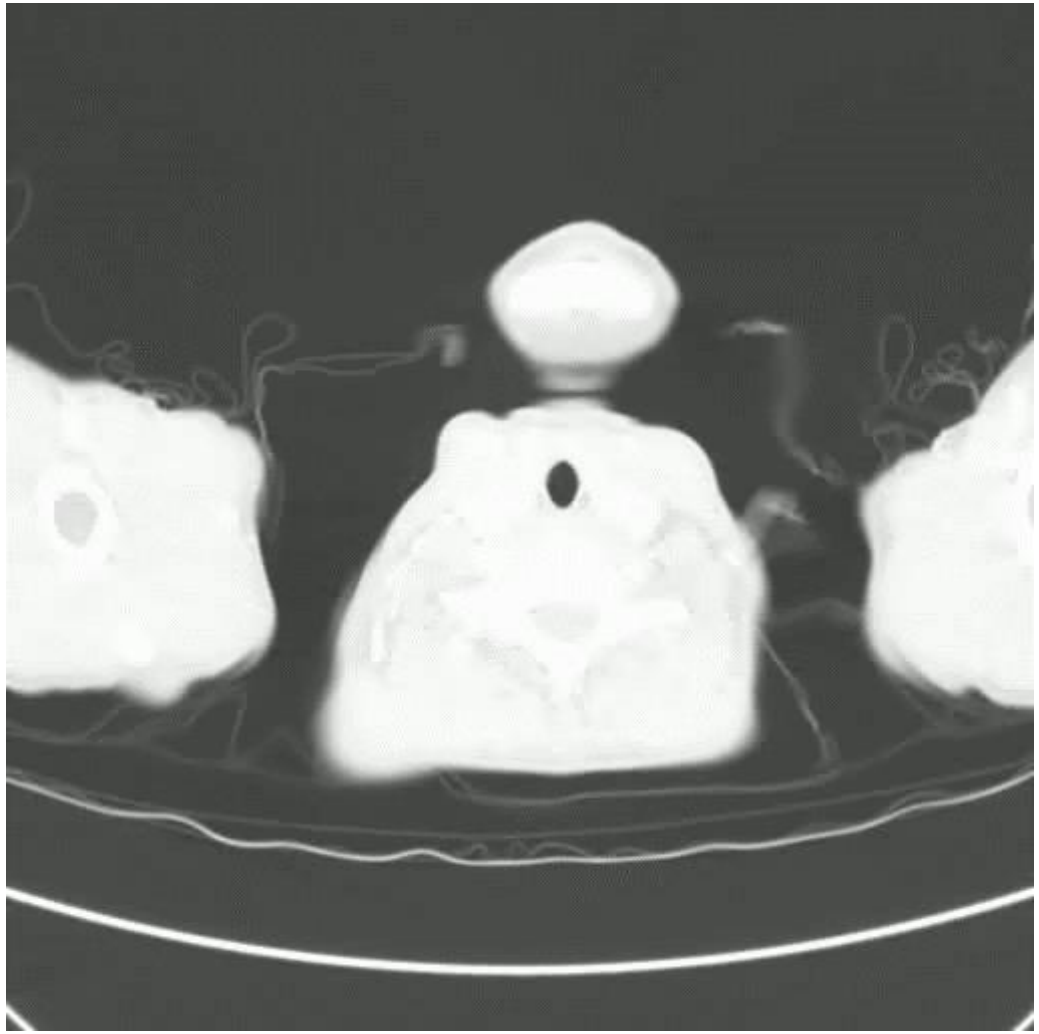
(Korean J Thorac Cardiovasc Surg 1995;28:1007-13)

결 론

부산대학교병원 흉부외과에 1983년 1월부터 1992년 12월까지 기관지확장증으로 내원하여 치료를 받았던 환자 80명에 대하여 임상적인 연구결과 다음과 같이 요약할 수 있었다.

1. 기관지조영술 또는 HRCT상 saccular type이 54.9%로 가장 많았고 cylindrical type과 mixed type은 각각 19.6%, 17.6%였고 varicose type은 7.8%였다.
2. 기관지조영술 또는 HRCT상 병변의 위치는 좌폐에 61.2%로 우폐 38.8%보다 더 많았고 폐엽별로는 좌하엽에 34.8%로 가장 많았고 설상구역에 21.7%, 우중엽에 15.5%, 우하엽에 14.7%였다.
3. 객담의 세균학적 검사상 감염의 원인균으로 Alpha-hemolytic streptococcus 48.8%로 가장 많았고 그다음은 Klebsiella 21.3%, Pseudomonas 10.0%, Candida 10.0%, Staphylococcus aureus 6.2%, Haemophilus influenza 3.7%의 순이었다.
4. 고식적 치료에 사용된 약물은 1세대 Cefalosporin, Aminoglycoside, Ampicillin의 순으로 많았고, 약제 감수성검사는 Alpha-hemolytic streptococcus와 Staphylococcus aureus는 Cephalothin과 Penicillin에 감수성이 있는 경우가 많았고 Klebsiella, Pseudomonas aeruginosa 등은 Amikacin과 Tobramycin에 감수성이 있는 경우가 많았다.
5. 약물치료를 시행한 30례에서 증상의 호전을 보았는데 대부분 cylindrical type의 경우는 3주 이내에 saccular type의 경우는 3주 이상의 치료에 증상의 호전을 보였다.
6. 50례의 수술중 좌하엽절제술이 38.0%로 가장 많았고 좌하엽 및 설상엽절제술이 22%, 우중엽 및 하엽절제술이 16%, 우하엽절제술이 10.0%, 좌측전폐적출술이 10%, 우측전폐적출술이 4.0%의 순이었다.
병변을 완전히 제거하지 못한 경우가 10례 있었는데 수술한 동측에 2례, 반대측에 8례였고 이들중엔 기관지내경이 가역적이라고 생각되는 경우는 치유를 목표로 비가역적인 경우는 증상을 경감시킬 목적으로 술후 약물치료를 병행하였다.

F/62
RML lobectomy
+ LLL superior sub-segmentectomy for lung cancer (2016)



2016-02-24

2024-03-12

Surgical management of non-cystic fibrosis bronchiectasis

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Contributions: (I) Conception and design: M Hiramatsu; (II) Administrative support: M Hiramatsu; (III) Provision of study materials or patients: M Hiramatsu; (IV) Collection and assembly of data: M Hiramatsu; (V) Data analysis and interpretation: M Hiramatsu; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

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Abstract: Non-cystic fibrosis bronchiectasis (bronchiectasis) is an abnormal dilatation of the bronchi and bronchioles, resulting from a prolonged recurrent infectious process due to various causes and predisposing factors. This disease has several etiologies and affects a heterogeneous population of patients. The most important viewpoint for the surgical management of bronchiectasis is to select appropriate candidates for surgery and conduct suitable anatomic lung resections at the right time under appropriate conditions. The ideal candidates for lung resection are symptomatic patients with focal disease due to truly localized bronchial pathology regardless of optimal and absolute medical management.

J Thorac Dis 2018;10(Suppl 28):S3436-S3445

Table 1 Summary of studies applying the surgical treatment of bronchiectasis

Reference	Published year	Setting	No.	Mean age, years	Male/ female	Morbidity (%)	Mortality (%)	Microorganisms	Rate of procedure involving segmentectomy (%)
Prieto *et al.* (16)	2001	Portugal	119	42	48/71	15.0	0.0	HI, SP, SA, PA	27.0
Fujimoto *et al.* (17)	2001	Germany	90	45	44/46	19.6	0.0	HI, SA, SP, PA	33.7
Kutlay *et al.* (18)	2002	Turkey	166	34	74/92	10.5	1.7	HI, PA, SP	22.7
Balkanli *et al.* (19)	2003	Turkey	238	24	205/33	8.8	0.0	PA, HI, KP, SA, TB	15.1
Haciibrahimoglu *et al.* (20)	2004	Turkey	34	11	18/17	17.6	2.8	SA, PA, KP, SP	25.6
Eren *et al.* (21)	2007	Turkey	143	23	91/52	23.0	1.3	HI, SA, SP, PA	28.2
Sirmali *et al.* (22)	2007	Turkey	176	12	81/95	13.0	0.0	HI, PA, SP	ND
Zhang *et al.* (23)	2010	China	790	42	466/324	16.2	0.0	ND	ND
Gursoy *et al.* (24)	2010	Turkey	92	39	38/54	16.0	1.0	ND	19.0
Bagheri *et al.* (25)	2010	Iran	277	35	200/77	15.8	0.7	ND	18.7
Caylak *et al.* (26)	2011	Turkey	339	22	301/38	13.0	0.6	ND	26.5
Hiramatsu *et al.* (27)	2012	Japan	31	54	2/29	18.2	0.0	NTM, PA, SA, HI	33.3
Al-Refaie *et al.* (28)	2013	Egypt	138	30	77/61	0	0	ND	ND
Balci *et al.* (29)	2014	Turkey	86	38	58/28	14	1.2	KP, SP, HI, SA, PA	0
Vallilo *et al.* (30)	2014	Brazil	53	41	27/26	25	3.8	Asp, PA, NTM, SP	ND

ND, not described; *HI, Haemophilus influenza; PA, Pseudomonas aeruginosa; SA, Staphylococcus aureus; SP, Streptococcus pneumoniae; KP, Klebsiella pneumonia;* NTM, Nontuberculous Mycobacteria; *Asp, Aspergillus.*

Efficiency and safety of surgical intervention to patients with Non-Cystic Fibrosis bronchiectasis: a meta-analysis

Li-Chao Fan[1], Shuo Liang[1], Hai-Wen Lu[1], Ke Fei[2,*] & Jin-Fu Xu[1,*]

No quantitative systematic review was found to report the efficiency and safety of surgical resection in the management of non-cystic fibrosis (non-CF) bronchiectasis. We therefore conducted a meta-analysis to assess the effects of operative intervention to patients with non-CF bronchiectasis. PubMed, the Cochrane library and Web of Science databases were searched up to July 8th, 2015. The pooled mortality from 34 studies recruiting 4788 patients was 1.5% (95% CI, 0.9–2.5%). The pooled morbidity from 33 studies consisting of 4583 patients was 16.7% (95% CI, 14.8–18.6%). The pooled proportion of patients from 35 studies, consisting of 4614 patients who were free of symptoms was 66.5% (95% CI, 61.3–71.7%) after surgery. The summary proportion of patients from 35 articles including 4279 participants who were improved was 27.5% (95% CI, 22.5–32.5%), and 9.1% (95% CI, 7.3–11.5%) showed no clinical improvement. In conclusion, our analysis indicated that lung resection in the management of non-CF bronchiectasis is associated with significant improvements in symptoms, low risk of mortality and acceptable morbidity.

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Lung Resection Improves the Quality of Life of Patients With Symptomatic Bronchiectasis

2010-2013

Background. Bronchiectasis is a significant cause of morbidity. Surgical resection is a treatment option, but its main outcomes regarding quality of life (QOL) and physiologic consequences have not been addressed previously, to our knowledge. We aimed to evaluate the effect of surgical procedures on QOL, exercise capacity, and lung function in patients with bronchiectasis in whom medical treatment was unsuccessful.

Methods. Patients with noncystic fibrosis in whom medical treatment was unsuccessful and who were candidates for lung resection were enrolled in a prospective study. The main measurements before lung resection and 9 months afterward were QOL according to the Short Form 36 Health Survey and World Health Organization Quality of Life Questionnaires, lung function test results, and the results of maximal cardiopulmonary exercise testing on a cycle ergometer.

Results. Of 61 patients who were evaluated, 53 (50.9% male, age 41.3 ± 12.9 years) underwent surgical resection (83% lobectomies), and 44 completed the 9-month follow-up. At baseline, they had low QOL scores, mild obstruction, and diminished exercise capacity. After resection, 2 patients died and adverse events occurred in 24.5%. QOL scores improved remarkably at the 9-month measurements, achieving values considered normal for the general population in most dimensions. Functionally, resection caused mild reduction of lung volume; nevertheless, exercise capacity was not decreased. In fact, 52% of the patients improved their exercise performance. Multiple linear regression analysis showed that low QOL before resection was an important predictor of QOL improvement after resection ($p = 0.0001$).

Conclusions. Lung resection promotes a significant improvement in the QOL of patients with noncystic fibrosis bronchiectasis without compromising their exercise capacity.

(Ann Thorac Surg 2014;98:1034–41)

Lung Resection Improves the Quality of Life of Patients With Symptomatic Bronchiectasis

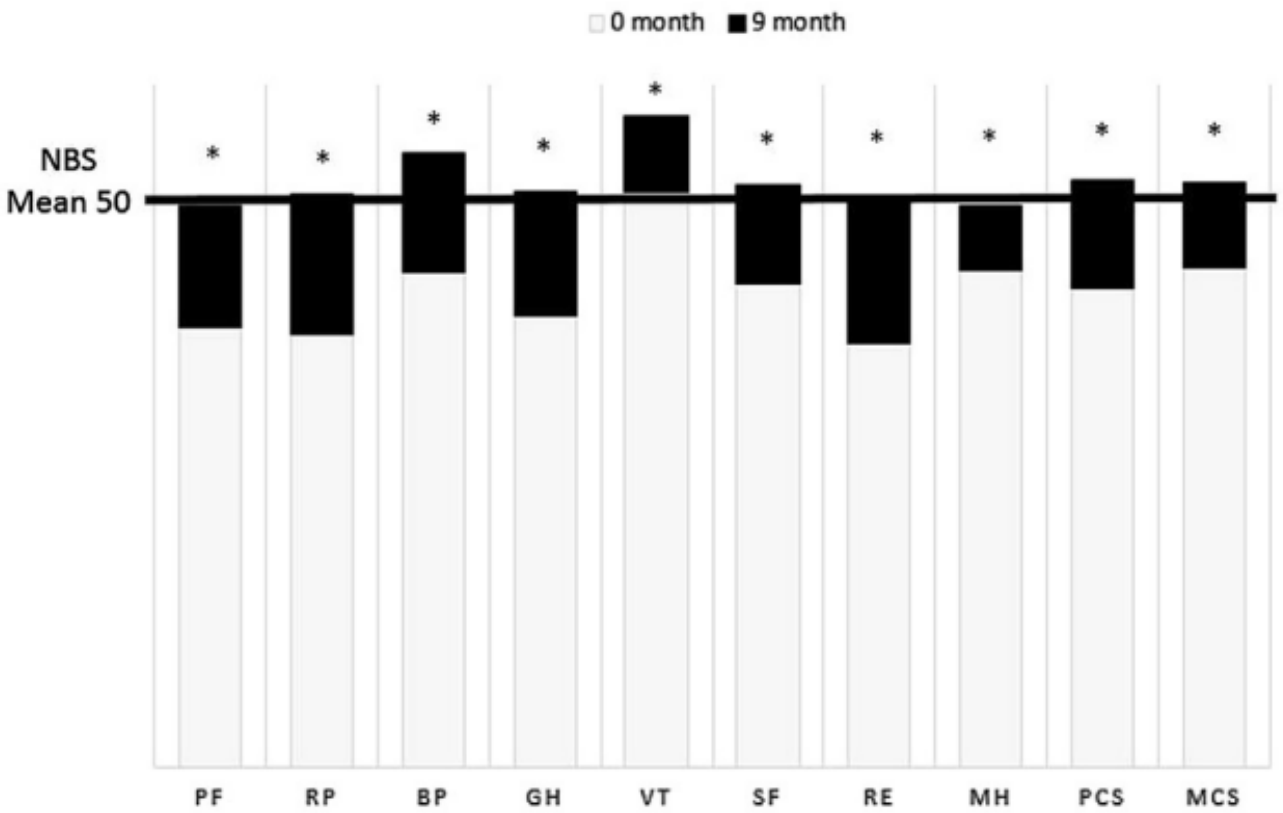
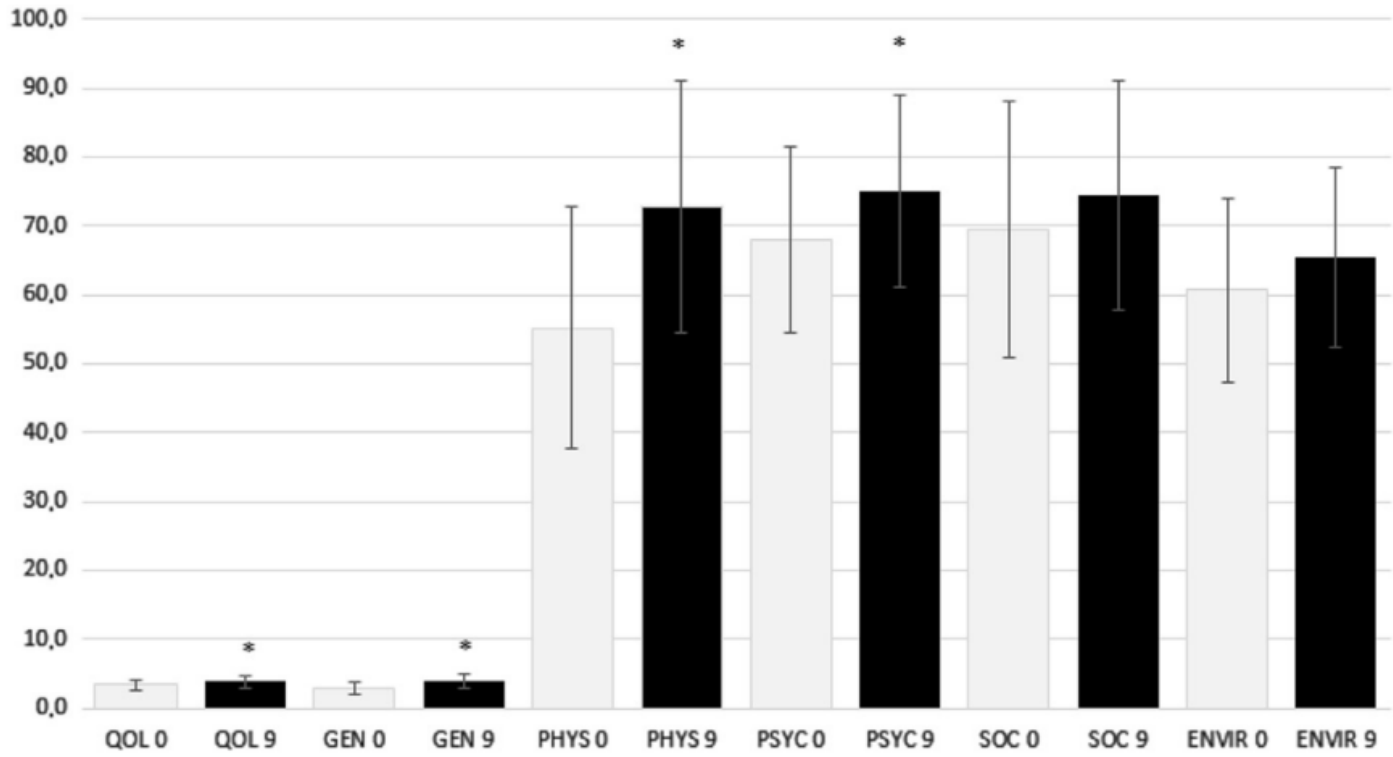


*Fig 2. Short Form 36 Health Survey Questionnaire results at baseline and at 9-month evaluation using norm-based scores (NBS) for 1998 United States general population. (SF36 scales are scored using norm-based methods having a mean score of 50 with a standard deviation of 10). *$p < 0.05$. (BP = bodily pain; GH = general health; SF = social functioning; MCS = mental component score [VT + SF + RE + MH]; MH = mental health; PCS = physical component score [PF + RP + BP + GH]; PF = physical functioning; RE = role emotional; RP = role physical; VT = vitality.)*

(Ann Thorac Surg 2014;98:1034–41)

Lung Resection Improves the Quality of Life of Patients With Symptomatic Bronchiectasis

*Fig 3. World Health Organization Quality of Life Questionnaire results at baseline and at 9-month evaluation. *Statistically significant improvement. (ENVIR = environmental; GEN = general health; PHYS = physical health; PSYC = psychologic; SOC = social relations; QOL = quality of life.)*



(Ann Thorac Surg 2014;98:1034–41)

Lung Resection Improves the Quality of Life of Patients With Symptomatic Bronchiectasis

Table 4. Baseline and Ninth Month Complete Pulmonary Function and Cardiopulmonary Exercise Test Results (44 Patients Completed Follow-Up)

Tests	Variables	0 month	9th month	*p*
LFT (n = 44)	FVC (L)	3.15 ± 0.9	2.85 ±0.8	<0.05
	(% predicted)	79.3 ± 17.9	71.4 ±17.7	<0.05
	FEV_1 (L)	2.21 ± 0.8	1.98 ± 0.8	<0.05
	(% predicted)	68.5 ± 21.4	61.1 ± 21.1	<0.05
	FEV_1/FVC	0.7 ± 0.1	0.7 ± 0.2	0.400
	DLCO (mL/min · mm Hg) (n = 37)	23.2 ± 7.6	21.7 ± 8.2	0.092
	DLCO % predicted	92.1 ± 24.6	86.3 ± 27.1	0.340
CPET (n = 44)	Vo_2max (mL/kg · min)	20.9 ± 7.4	20.2 ± 8.1	0.452
	(% predicted)	69.9 ± 17.6	67.7 ± 17.7	0.269
	VE (L/min)	52.1 ± 19.4	49.6 ± 17.6	0.510
	VE/MVV	0.6 ± 0.1	0.7 ± 0.2	0.001
	VTmax (L)	1.32 ± 0.4	1.25 ± 0.4	0.476
	VE/VCO_2	34.2 ± 4.8	35.7 ± 9.9	0.37
	HRmax (beats/min)	151.9 ± 20.4	148.1 ± 17.7	0.172
	(% predicted)	85.5 ± 10.3	83.4 ± 9.1	0.175
	RER	1.21 ± 0.13	1.22 ± 0.2	0.833
	Workload (W)	103.2 ± 38.9	100 ± 33.6	0.195
	SpO_2%	93.7 ± 4.3	94.1 ± 4.2	0.690
	Borg dyspnea	4.3 (IQR 1–7)	4.8 (IQR 3–7)	0.377
	Borg lower limbs	4.3 (IQR 1–7)	4.9 (IQR 2–7)	0.231

(Ann Thorac Surg 2014;98:1034–41)

기관지확장증 환자의 수술 후 폐기능 변화

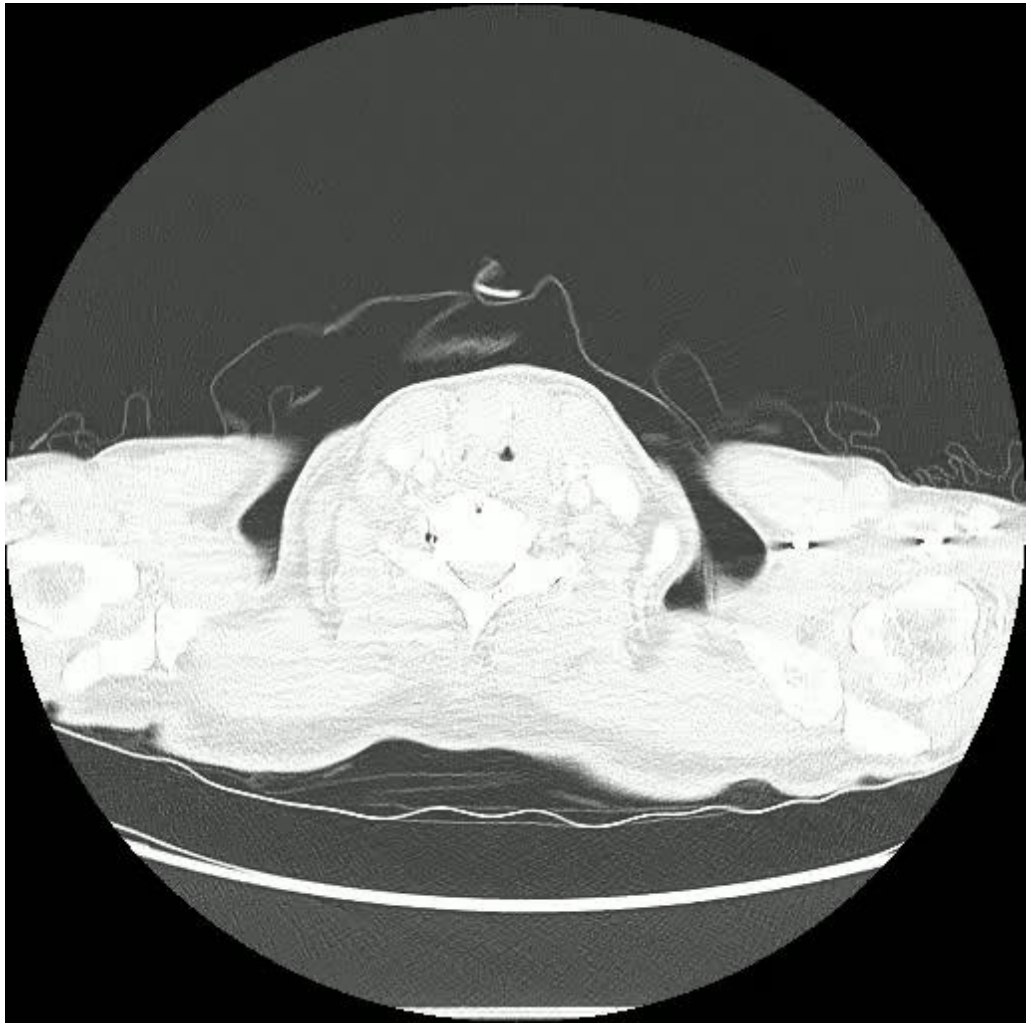
- 2003~2013, 97명 (남자 45명), 평균 나이 53세, 후향적 분석
- PFT (수술 후 20개월 ± 14.42)

FVC	- 0.38 L (± 0.58 L)	p-value<0.001
FEV1	- 0.22 L (± 0.35 L)	p-value<0.001
PEF	- 0.56 L (± 1.42 L/S)	p-value<0.001
FEV1/FVC	2.52 ± 10.0%	p-value=0.015

- 결론 : 기관지확장증 환자에서 수술로 병변이 제거되었을 때,
  폐 용적은 감소하나 기도 폐쇄의 지표인 FEV1/FVC은 증가한다

이현우 외 15 명, 2013 대한결핵및호흡기학회 추계학술발표초록집

M/67
Lt. pneumonectomy for LUL endobronchial cancer (2022)



2022-12-29

2024-03-05

Surgery for predominant lesion in nonlocalized bronchiectasis

Jie Dai, PhD, Xinsheng Zhu, MD, Dongliang Bian, MD, Ke Fei, MD, Gening Jiang, MD, and Peng Zhang, MD

From the Department of Thoracic Surgery, Shanghai Pulmonary Hospital Tongji University, Shanghai, People's Republic of China.

J Thorac Cardiovasc Surg 2018;155:2779-89

Objective: Patients with nonlocalized bronchiectasis are encountered commonly; however, there is little information regarding surgical intervention in this patient population. The aim of this study was to evaluate symptomatic response and safety of anatomic resection of the predominant lesion via the use of lobectomy for the management of nonlocalized bronchiectasis.

Methods: We reviewed the medical records of 37 consecutive patients who underwent lobectomy via thoracotomy for nonlocalized bronchiectasis between 2010 and 2013. The main surgical indications were nonlocalized bronchiectasis with one predominant lesion, failure of medical treatment, and adequate cardiopulmonary reserve. The predominant lesion was determined by preoperative computed tomography and/or bronchoscopy. Preoperative symptoms were compared with postoperative symptoms and analyzed by the use of paired techniques.

Results: The mean patient age was 54.5 $\pm$ 6.4 years. There was no operative mortality. Postoperative complications occurred in 8 (21.6%) patients, including 1 with empyema, 1 with persistent air leak, and 6 with minor transient complications, all of which were manageable without any reoperation. After lobectomy, the median extent of residual bronchiectatic areas in the remaining lungs was 25% (range, 12.5%-42.9%). The frequency of acute infection (5.3 $\pm$ 2.1/year vs 1.8 $\pm$ 2.3/year) and hemoptysis (4.9 $\pm$ 2.8/year vs 1.1 $\pm$ 0.7/year) decreased significantly and the amount of sputum also decreased (37.1 $\pm$ 3.4 mL/day vs 10.7 $\pm$ 4.6 mL/day). Twenty-three (62.2%) patients were asymptomatic after surgery, 10 (27.0%) were symptomatic with clinical improvement, and 4 (10.8%) had no change or worsened.

Conclusions: Lobectomy for the predominant lesion is a safe procedure in the surgical treatment of nonlocalized bronchiectasis and leads to significant relief of symptoms with good rates of satisfaction. (J Thorac Cardiovasc Surg 2017;153:979-85)

FIGURE 1. A 55-year old male patient suffered from bilateral bronchiectasis. The predominant lesion in the left lower lobe, the minor one in the right middle lobe, and some scattered lesions in both sides.

J Thorac Cardiovasc Surg 2018;155:2779-89

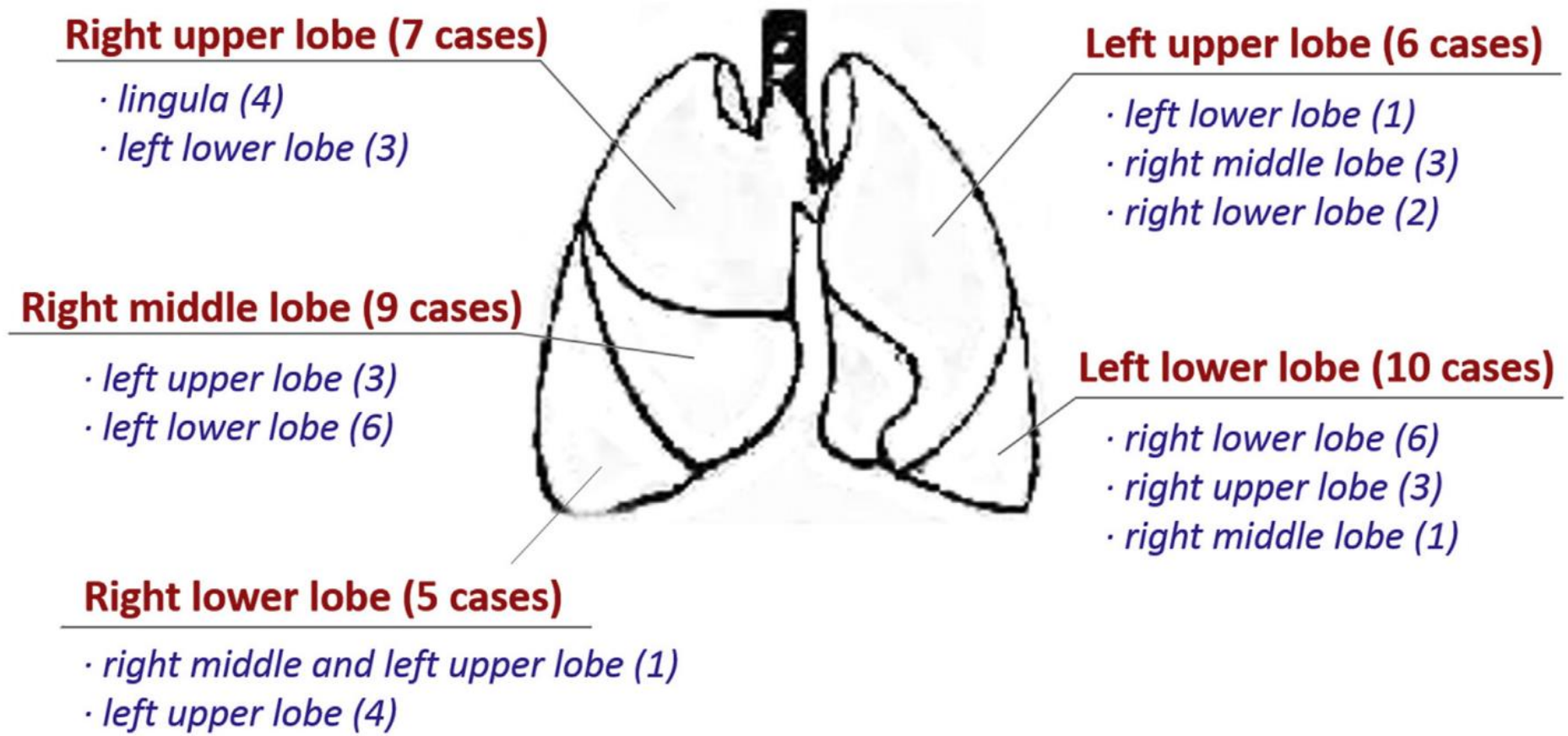


FIGURE 2. Distribution of involved area in nonlocalized bronchiectasis. The predominant lesions (in *red*) were resected by lobectomy and the minor lesions (in *blue*) were left untouched. The numbers in parentheses represent the number of lesion.

J Thorac Cardiovasc Surg 2018;155:2779-89

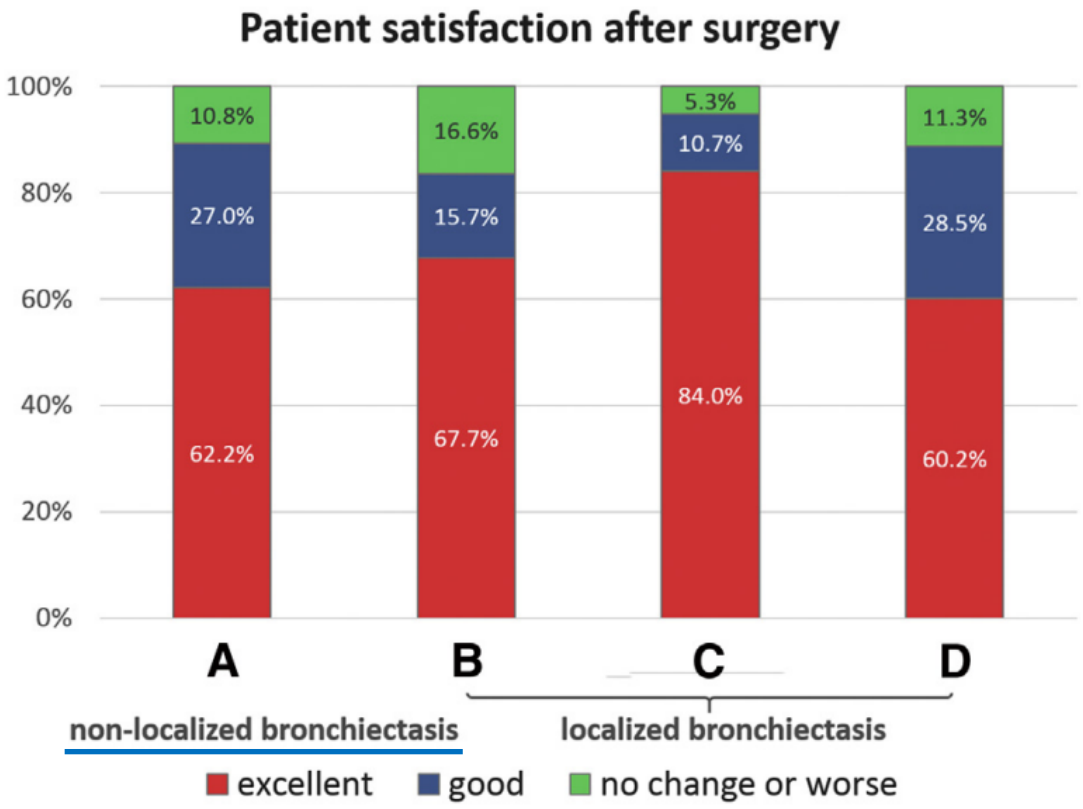


FIGURE 3. Comparison of patient satisfaction with regard to symptom relief after surgery between non-localized and localized bronchiectasis. A, Data from the present study; B, data from the study by Zhang and colleagues[4]; C, data from the study by Gursoy and colleagues[15]; and D, data from the study by Sehitogullari and colleagues.[16]

J Thorac Cardiovasc Surg 2018;155:2779-89

Interdisciplinary CardioVascular and Thoracic Surgery 2024, 38(2), ivad175
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ORIGINAL ARTICLE

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Surgery for bronchiectasis-destroyed lung: feasibility of video-assisted thoracoscopic surgery, and surgical outcomes

Xinnan Xu[†], Jie Dai[†], Kaiqi Jin[†], Xiaogang Liu, Yang Yang, Tao Ge, Qiuyuan Li, Chao Jiang, Wenxin He, Haifeng Wang, Peng Zhang [‡], and Gening Jiang[*,‡]

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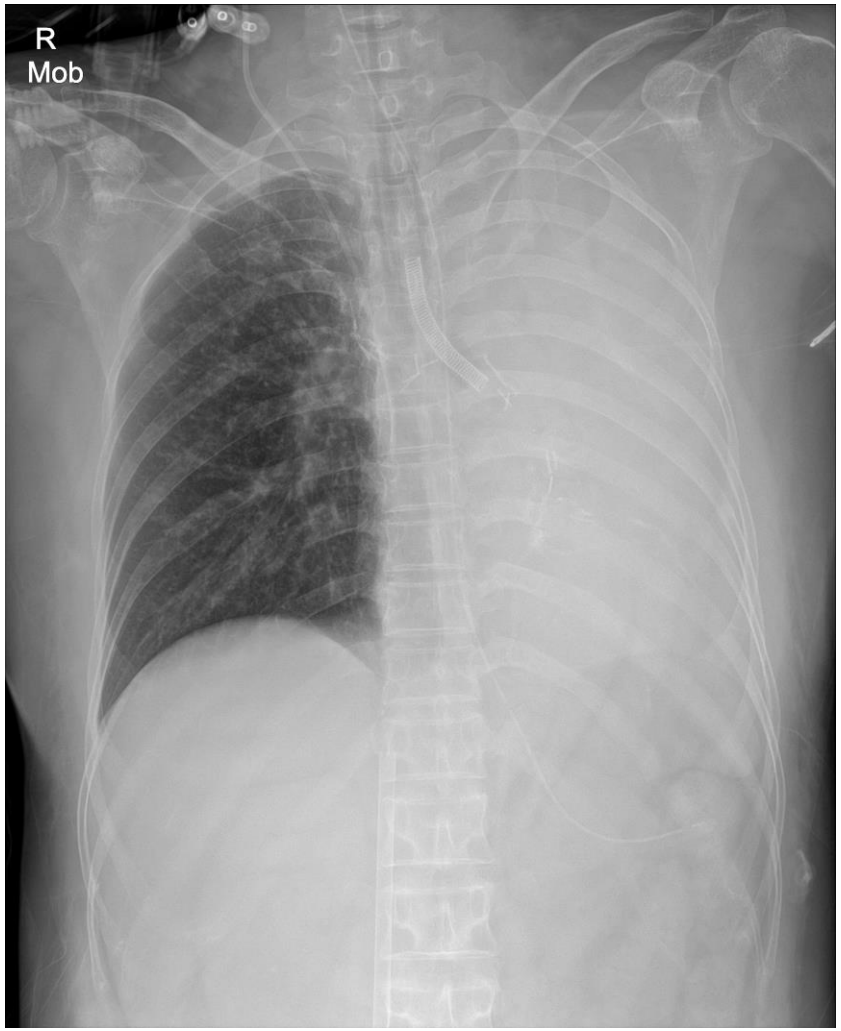
Summary

In a retrospective study of 143 bronchiectasis-destroyed lung (BDL) patients underwent surgical treatment, we presented surgical outcomes of both video-assisted thoracoscopic surgery (VATS) and thoracotomy. Factors for prognostic outcomes were identified. VATS was feasible in well-selected patients. Removing all BDL lesions contributed to a satisfactory symptomatic outcome.

Year 2013-2018	Perioperative and symptomatic results	Thoracotomy n=79	VATS n=64 (well-selected)
Safety	Operative time, min	170	151
	Blood loss, ml	250	200
	Conversion, %	/	14.1%
	Mortality, %	0	0
	Major complications, %	27.8	9.4
Recovery	Chest tube duration, d	7	4
	Hospitalization, d	8	5
	Return to full activity, m	3.0	1.5
Effectiveness	Benefit, %	97.5	100

Interdisciplinary CardioVascular and Thoracic Surgery 2024, 38(2), ivad175

F/59
LLL completion lobectomy (2023)
s/p LLL posterolateral segmentectomy for bronchiectasis (2017)
s/p RUL lobectomy for lung cancer (2016)



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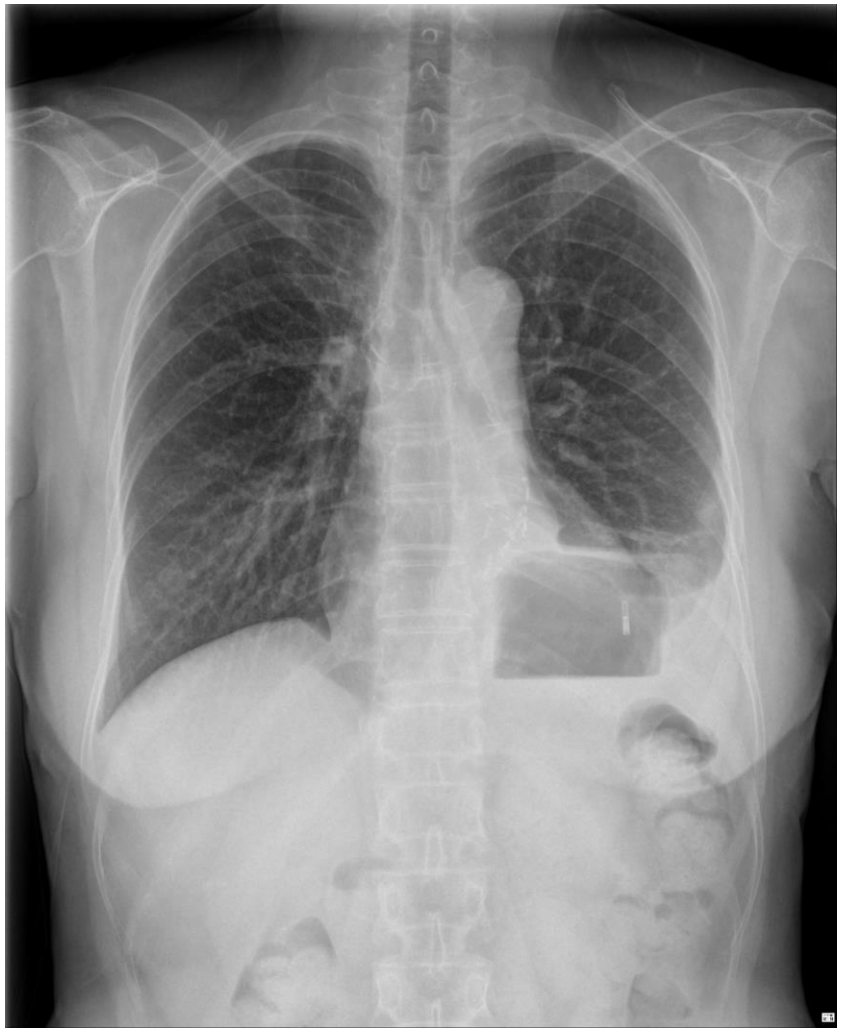


2024-03-14

F/59
Completion LLL lobectomy (2023)
s/p LLL posterolateral segmentectomy for bronchiectasis (2017)
s/p RUL lobectomy for lung cancer (2016)

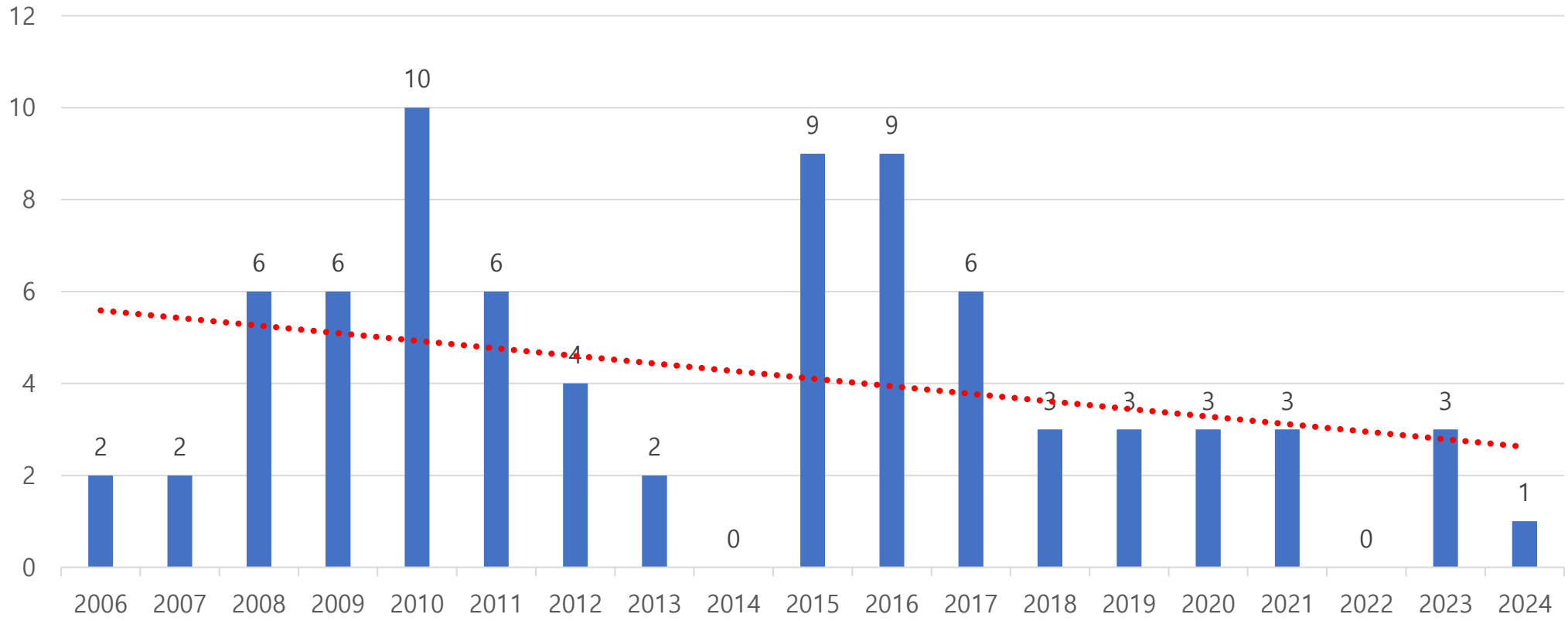
2023-06-16

2023-11-22

강동경희대병원

- 2006.08~2024.06
- 75 patients (male 61%)
- Mean 60 years old (20~79)
- 78 resections by one surgeon

VATS (2015~2024) = 16 (40%)



VATS (2006~2024) = 17 (22%)

Right	35
Segmentectomy	7
S1	1
S2	2
S1~2	1
S7	1
S7~8	2
Lobectomy	27
RUL	13
RML	6
RLL	5
Bi-lobectomy	3
Pneumonectomy	1

Left	43
Segmentectomy	16
S3	1
S6	4
S1~3	3
S4~5	2
S7~10	5
S4~5 + S7~10	1
Lobectomy (± Seg.)	20
LUL	4
LLL + S4~5	4
LLL	12
Pneumonectomy	7

Conclusion

- 심폐기능이 수술에 적당하고, 국소적 병변을 가진, 잘 선택된 환자에서의 기관지확장증 수술은 위험성 측면에서 비교적 안전하게 시행될 수 있으며, 효용성 측면에서 증상 호전, 감염 악화 예방, 삶의 질 향상을 이룰 수 있는 좋은 치료 방법이다.

Thank for your attention