

Extra Pleural Pneumonolysis with or without Plombage in Thoracoplasty Failures

(Review of 21 cases)

By

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The Principles of Pneumonolysis cannot be thought of as a new arrival in the field of treatment of Pulmonary Tuberculosis. History records its use as early as 1891 and its further development lies closely with the progress of Collapse Therapy in general.

The introduction of standard Thoracoplasty was soon followed by the first Extra Pleural Pneumonolysis by Tuffier in 1891. Extra Pleural Pneumonolysis is the term given to the operation in which both the layers of Pleura and the underlying lung are stripped from the thoracic wall and the space thus created is filled with a 'Filling' whether it be air or any other substance. The idea attracted attention and the provision of the needed collapse without resorting to mutilated procedures were welcomed. Then came the problem of finding the suitable material for filling the extra pleural space. A review of literature tells us of the different substances that had been used but only to be discarded for various reasons.

In 1910 Tuffier used fat and later used omentum and fresh lipomas. In 1913 Baer used liquid paraffine and Jessan used wax in 1921, in the same year Archibald used pedicled muscle as pectoral muscle and female breast etc. Other substances used were:- gauze, gelatine, rubber balloons, gum sheeting, bone graft etc. But one by one all of these were given up because of the intolerance of foreign body to host (John Alexander 1933) but paraffine and air were continued for some time.

In recent years a whole-new array of synthetic filling material has been put in the market which increased the interest in Plombage. In 1946 Wilson reported the use of methyle methacrylate spheres as a filling material and since then lucite balls, ping pong balls, spongistan, polystan etc have been widely used.

John Alexander in 1933 recorded the advantage of extraperiosteal plan of separation over the extra pleural. Woods, Buente, Goldman, Adam and others thought that the high complication rate associated with the extrapleural Plombage could be due to the proximity of the Plombage to the diseased area which may interfere with its blood supply so the additional thick vascular layer of muscles and fascia between the Plombage and the diseased lung might solve the problem. So mostly the extra periosteal Plombage Thoracoplasty is done now in place of former extra plueral Plombage. In 1951, Roger Mitchel said that the extraperiosteal Plombage Thoracoplasty might even take the place of standard Thorocaplasty; whether this will happen or it will remain an other incident in the history of the evolution of the surgical therapy of the pulmonary tuberculosis remains to be seen.

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Extra pleural Pneumonolysis has been tried on 21 cases treated in this Sanatorium from 1949 to 1953. Of these, 17 were men and 4 women. The average age is 30 years, the youngest being 19 years and the oldest 52 years.

TABLE I

<i>AGE</i>			
Total cases	= 21	maximum age	= 52 years
Men	= 17	minimum	= 19 years
Women	= 4	average	= 30 years

All these cases had undergone standard Thoracoplasty operations but the result of the Plasty was not completely successful.

In order to assess the results, the cases have been divided into following groups:—

Group I :— Contralateral lung practically free from disease.

Group II :— Contralateral lung having disease but fairly controlled by other measures.

Group III :— Advanced cases (Contralateral lung having active disease) where this procedure has been tried as a desperate measure.

Each of these groups have been further subdivided into:—

A = Sputum not converted but with or without cavity being visible on X-ray after thoracoplasty.

B = Sputum converted but cavity visible on X-ray after thoracoplasty. -

The time interval between the Thoracoplasty and the Pneumonolysis is indicated in the following tables :—

TABLE No. II.

		No. of Cases	Average period	Maximum	Minimum
Group I	A	6	5 months	7 months	3 months
	B	1	5 months	5 months	5 months
Group II	A	6	6 months	18 months	1 month
	B	4	10 months	23 months	5 months
Group III	A	4	4 months	12 months	3 months
	B	—	—	—	—

From table 2 we can assess the results of Thoracoplasty in Group I, seven cases were free of disease in the contralateral lung. Out of them 6 remained positive for A.F.B. and though one was converted negative but still showed cavity on X-ray.

In Group II, ten patients had disease in the contralateral lung which was controlled before operation; out of them 6 remained positive though 4 were converted but cavity persisted.

In Group III, all the 4 cases remained positive with persistent cavitation on the operated side. The time interval between Thoracoplasty and Pneumonolysis is also shown, showing the maximum, minimum and the average period.

The result of the Pneumonolysis is shown in table III.

TABLE III

		No. of cases	Sputum converted negative.	Sputum remained positive.
Group I	A	6	4	2
	B	1	1	—
Group II	A	6	4	2
	B	4	4	—
Group III	A	4	1	3
	B	—	—	—

In Group I, out of 6 cases with positive sputum after Thoracoplasty, 4 were converted after Pneumonolysis, while in Group II, out of the 6 cases with positive sputum 4 were converted negative while 2 remained positive. In Group III, out of the 4 cases only one could be benefitted and converted negative.

Time lag of sputum conversion after the Pneumonolysis.

Maximum = 8 months

Minimum = 1 month

Average = 3 months

Packing material used:

Simple stripping (no pack) = 9 cases

Polystan = 8 cases

Spongistan = 2 cases

Lucite or Ping Pong Ball = 2 cases

Table IV shows the condition in the immediate post—operative period. Duration of fever is 8 to 13 days with average deviation of temperature from 100-101 F. In 3 cases there was marked serum collection and 2 got wound infection.

TABLE IV.

		Stripping only (No pack)	Polystan	Spongistan	Ball Pack
Fever	Average range	99-100 F.	100-101 F.	100 F.	100 F.
	Average duration	7 days	13 days	10 days	8 days.
Serum Collection		—	2	1	—
Wound infection		—	1	1	—
Dyspnoea		—	—	—	—

Complications : Pleural tear..... 2
Broncho--Pleural Fistula.... 1

Results : Quiscent..... 1
much improved..... 9
improved..... 8
stationery..... 3

CASE REPORTS

Case No. I

Shri P. K. Male 52 years, Electrical Engineer from Nagpur was admitted at Lady linlithgow Sanatorium on 9th June, 1951 with the complaints of fever, cough with expectoration and irregular bowels.

Present illness :

Onset 1946 with infiltration and cavitation right upper zone, for which he had A.P. (right) for 2 years. In 1950 he developed cavity left upper zone.

Sputum was positive for A.F.B.

He was operated for Cholilithiasis.

Diabetics for 4 years before admission.

Family History :

Uncle died of T. B. in 1928.

Sister died of T. B. in 1935.

On Admission :

X-ray Chest:

Right lung showed healed opacities upper zone and obliteration of Costo-phrenic angle.

Left lung showed infiltration and cavitation upper zone.

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Pathological Investigations :

R.B.C. 4.32 million
 Hb 98%
 W.B.C. 10312
 D.L.C.

Polymorph 52%
 Lymphocyte 42%
 Large mono 4 %
 Eosinophil 2%

B.S.R. 17 mm 1st hour (Wester-green)
 Urine sugar 1.75%
 Blood sugar 260 mgm %
 Sputum positive for A.F.B.

Treatment ;

A. P. left started on 18.6.1951 but had later to be abandoned being contra-selective as one thick adhesion was attached to the subclavian artery which on thoracoscopy could not be cauterised.

5 rib Thoracoplasty on the left side was completed on 7-11-1951. He was on anti-tuberculous drugs before and after Thoracoplasty. Diabetics was treated with Insuline.

After Thoracoplasty, sputum remained positive for A.F.B. So on 27.2.1952 extra Pleural Pneumonolysis was done and the space packed with Spongistan. Sputum got converted negative in June, 1952. The patient was discharged as much improved on 11.7.1952.

CASE No. II

Shri P. R., male, 19 years, student from U.P. was admitted on 11.1.1952.

Onset :

April 1951 with hemoptysis. Sputum was found positive for A.F.B.

Family History :

2 brothers died of T.B.

Before Admission he had the following treatment :—

Streptomycin— 30 grams.
 P.A.S. — 400 grams.
 A. P. left was tried but unsuccessful.
 Left phrenic crush — July 1951.
 P.P. from October 1951 to December 1951.

On Admission :

x-ray chest showed cavity left upper zone.

Pathological Investigations:

R.B.C. 4 million
 Hb 90%
 W.B.C. 8900
 D.L.C.
 Polymorph 54%
 Lymphocyte 37%
 Esinophil 6%
 Large mono 3 %
 B.S.R. 3 mm 1st hour (Wester green)
 Sputum positive for A.F.B.

Treatment ;

6 rib Thoracoplasty left side completed on 17.3.1952. Sputum remained positive for A.F.B. in spite of post-operative Chemotherapy.
 On 8.10.52 extra Pleural stripping alone was done after removing a piece of 7th rib.
 Sputum was converted negative by the end of October 1952. Chemotherapy was given in the post-operative period for two months.
 Patient was discharged as quiescent on 3.2.1953.

CASE No. III.

Shri V., male, 35 years, a clerk from U.P. was admitted on 28.4.1953.

Onset ;

April 1942 with fever and cough. Sputum was negative for A.F.B. He was treated at Bhowali sanatorium (U.P.) and was discharged as clinically cured in November 1942.
 Relapse in August 1948 with cavity right upper zone, sputum was positive for A.F.B. He was treated at New Delhi T.B. Centre with Chemotherapy and P. P. The cavity closed and sputum became negative in 1949.
 Cavity reappeared in 1950. He was again put on Chemotherapy and cavity disappeared in 3 months time.
 Cavity again reappeared in 1953. From 1948 to 1953 all along for 5 years he was on P. P.

On Admission :

X-ray chest showed a cavity with infiltrative lesions in the right upper zone.
 Evidence of P. P. under both the diaphragm.

Pathological Investigations ;

R.B.C. 4.13 million
 Hb 90%
 W.B.C. 9000
 D.L.C.

Polymorph 58 %
 Lymphocyte 40%
 Large mono 2 %
 B.S.R. 40 mm 1st hour (Wester green)
 Sputum positive for A.F.B.

Treatment :

A. P. right — unsuccessful

4 rib Thoracoplasty completed on 10.6.1953. Sputum remained positive inspite of the use of Chemotherapy.

Extra Pleural Pneumonolysis with Polystan Pack was done after removing the 5th rib on 23.9.53 Sputum got converted negative in December 1953. Pack got infected and fistula formed. So on 20.8.1954 the pack was removed and broncho—pleuro—cutaneous fistula was detected. Wound was cleaned. Revision Thoracoplasty was done, Strepto and Pencil in was put in. Fistula got closed later on and the patient was discharged on 25.12.54 as improved.

Discussion

In the cases under review though extra pleural Pneumonolysis with and without pack was tried in Thoracoplasty failure cases; but this is not considered an elective procedure. If facilities for resection were available that could have been an elective and effective procedure. But under the circumstances this was undertaken as the next best procedure available, and 14 cases were converted negative and sent as non-infectious; giving us in this series 66% good results.

Two cases got wound infection and the pack was removed later; In one, Spongistan and the other Polystan was used as pack and the dissection was extra pleural; one of them developed broncho-pleuro-cutaneous fistula which got healed after the removal of the infected pack and revision Thoracoplasty.

It is better to do extra periosteal pneumonolysis then the extra pleural, as in the latter the pack may burrow into the lung parenchyma leading to bronch-pleural fistula.

Summary

21 cases out of which 16 cases remained sputum positive with or without cavity seen in the X-ray after Thoracoplasty are reviewed. In 5 cases though the sputum was converted negative by Thoracoplasty the cavity was still visible on X-ray.

Out of this series 10 cases had a lesion in the contralateral lung which was fairly controlled by other measures. 4 cases were far advanced with active disease on the contralateral lung.

Extra Pleural Pneumonolysis was done in all these cases. In 9 cases only stripping was done and in the other 12 cases, pack was done. Out of the 21 cases, 14 cases were converted negative while 7 cases remained positive. 2 cases got wound infection and one of them developed broncho-pleuro-cutaneous fistula.

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