

Surgery in Pulmonary Tuberculosis

By Dr. R. C. Jain*

SURGERY is an adjuvant procedure in some patients in the long term medical treatment of pulmonary tuberculosis and is almost always considered for residual lesions which persist after adequate drug regime.

Historical Review

Drainage operations of the cavities, minor collapse measures (Artificial pneumothorax, pneumoperitoneum and phrenic paralysis) and plombage operations are now only of historic importance. In 1885, De-Cerenville of Lausanne performed the first thoracoplasty. Since then thoracoplasty has undergone many changes and modifications but has established itself as one of the surgical procedures in the treatment of pulmonary tuberculosis. Resection of lung was first done by Tuffier in 1891. But much progress could not be made due to post-operative empyema and bronchopleural fistula till the advent of antibiotics (Penicillin in 1940, and Streptomycin in 1946), which has revolutionised the surgical treatment of pulmonary tuberculosis.

Due to the availability of antibiotics, modern chemotherapy and introduction of compulsory preventive health measures in western countries there has been a decline in the number of patients undergoing surgical treatment. This decline is also seen in our country but not to such an extent. In India, due to the existing socio-economic conditions, high default rate and cost, toxicity and non-availability of second line of drugs, surgery will remain an essential adjuvant in the treatment of pulmonary tuberculosis for a long time to come.

Modern chemotherapeutic agents given regularly and continuously in proper combination and dosage and for adequate length of time, it

is reported that 90-93% of cases can recover by medical treatment alone.

After an initial treatment of 6-12 months of chemotherapy, all patients should be reviewed and assessed to decide whether surgery can offer them a quicker recovery or whether to continue medical treatment. This is the right and appropriate time for the selection of cases for surgery because bacilli are likely to be sensitive to some of the major drugs. Otherwise those cases suitable for surgery will develop drug resistance and will lose the opportunity of maximum benefit from surgery. At this stage both morbidity and mortality are minimum. During 6-12 months of drug regime, chemotherapy should be able to convert the sputum and be able to produce significant general and radiological improvement. Cases having positive sputum or negative sputum with no significant radiological improvement or showing only initial improvement should be discussed between surgeon and

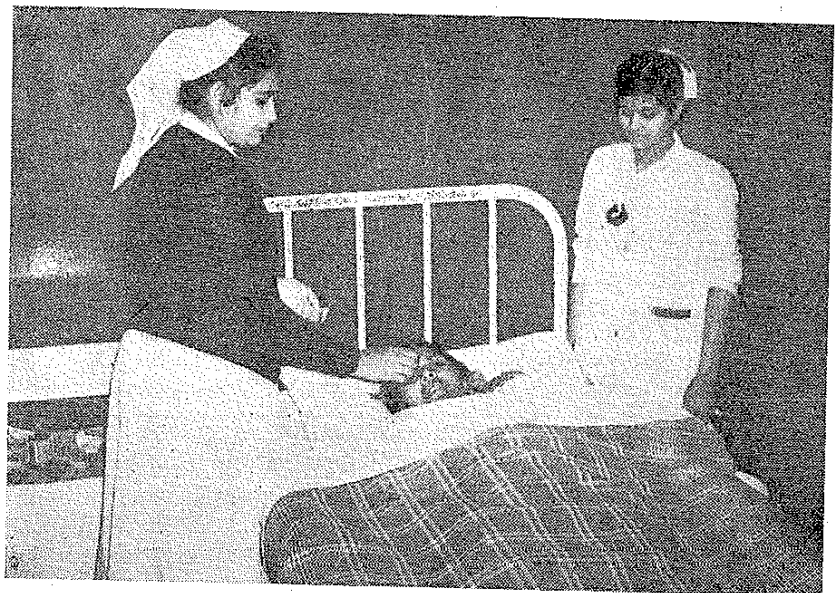
physician for surgery. Proper selection of cases is based on the close co-operation of the surgeon and the physician.

Indications

Presently a good percentage of patients are seen with positive sputum, extensive disease, advance age, poor respiratory reserve and resistant sometimes to all available drugs. These are the real problems. Such cases are difficult to treat since they are unsuitable for surgery and chemotherapy also does not offer any hope. Only very few with localised disease can be benefited by surgery. On all these cases pre and post-operative cover with second line drugs to which bacilli are sensitive is of great importance to prevent complications.

Surgery is indicated in cases with persistent cavitation and positive sputum. But in persistent cavitation with negative sputum (open negative cases) opinion differs. Some feel that these cases may be left alone. Others advocate resection to prevent relapse, haemoptysis, ballooning of the cavity, pneumothorax and secondary infection with fungus. Thick walled cavities mostly require surgery.

Gross bronchiectasis, broncho-



Surgery in Pulmonary TB will remain for a long time to come. Picture shows Nurses attending on a patient at the post-operative unit of the TB Hospital

*R.B.T.B. Hospital, Kingsway Camp, Delhi

stenosis, atelectasis, destroyed lobe or lung, tuberculoma, empyema and repeated haemoptysis are other indications for surgery.

Through clinical assessment, X-rays, sputum examination for A.F.B. and pyogenic organisms, bronchoscopy, bronchography and pulmonary function tests are essential investigations for surgery.

Surgical Procedures

Resection and thoracoplasty are the two operations now performed for pulmonary tuberculosis. The choice of the actual surgical procedures depends largely on the extent of the disease, the age, general condition and respiratory reserve of the patient and the presence of complicating bronchial or pleural disease.

With the advent of the antibiotics, chemotherapy, endotracheal anaesthesia and improvement in the surgical technique and pre and post operative management, resection (Lobectomy, Segmental resection, Pneumonectomy) has become the treatment of choice except where it is not feasible due to contralateral disease, poor general health etc. At the time of resection, attempt is made to remove most of the diseased portion but at times small nodules are left behind to be taken care of by chemotherapy. This conservative approach is adopted particularly in cases with bilateral or one lobe disease with scattered small nodules in the rest of the lung with a view to preserve as much functioning tissue as possible.

Segmental resection is often not possible as the disease is not confined strictly to broncho-pulmonary segments.

Thoracoplasty is the other operation sometimes required to treat the dreaded complications of resection viz. empyema, broncho-pleural fistula and residual space. This is called space reducing thoracoplasty. On the other hand, primary thoracoplasty is now done usually to obliterate an apical cavity where resection is contraindicated due to bilateral disease, poor general health etc. Primary thoracoplasty is now done only occasionally because resection has the advantage of removing the major foci of the disease.

Complications

Complication rate and mortality of resection depend upon the type of patients selected, pre-operative sputum status, and drug resistance and varies from surgeon to surgeon. Rate of complications and mortality is much more in positive, drug resistant cases than in negative or drug sensitive cases.

Empyema and broncho-pleural fistula are the major complications and treated by aspiration, tube drainage, and thoracoplasty. Atelectasis sometimes needs tracheal suction and bronchoscopic aspiration. Residual space often gets obliterated on its own but sometimes thoracoplasty is required. Other complications are post-operative shock, haemorrhage, wound infection, slipping of ligature etc. A few cases may show reactivation or spread of the disease to contralateral lung or the same lung.

Bleeding, paradoxical respiration and atelectasis are the main complications of thoracoplasty. Later on, infection of the space and deformity-scoliosis, drooping of the shoulder, etc. may result.

A question is always asked whether the remaining lung after surgery will be able to stand the stress and strain of the life. Answer most of the time is 'Yes'. Firstly, because cases with satisfactory respiratory reserve are selected for

surgery. Secondly, the lobe segment or lung which is to be resected, has very little function left due to the disease and the patient has already got adjusted to the reduced pulmonary reserve and therefore resection does not overburden the remaining pulmonary capacity. Thirdly, only that much of the lung tissue is removed as the respiratory reserve of the patient permits without any ill-effects like dyspnoea. All the lobectomy and segmentectomy cases have a normal life. After pneumonectomy, patients are advised to limit their activity according to their respiratory reserve and sedentary workers can carry out their routine work. But manual workers like labourers are advised to work to an extent which should not produce breathlessness. With little change in their job, labourers do well and also do not suffer physically or financially.

Follow up

A proper follow-up after operation is essential. After surgery, adequate drug treatment should be continued for a year or more depending upon the activity of the residual disease because resection should not be taken as an operation to eradicate the tuberculous process. Patient should also be followed up and watched for reactivation or spread of the disease for at least five years. Pneumonectomy cases should avoid weight gain and infection of the remaining lung as they stand infection badly.

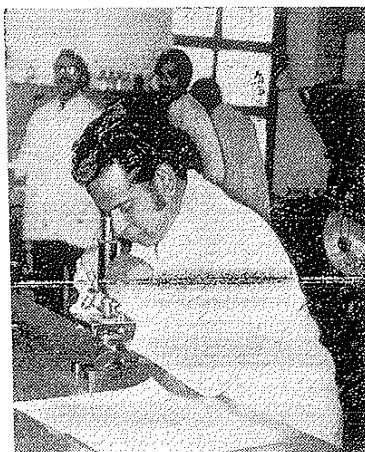
Conclusion

Surgery done at the right and the appropriate time offers the best results. Drug resistance is to be avoided because morbidity and mortality is very high in these cases. In drug resistant cases, pre and post operative cover with second line drugs to which bacilli are sensitive is essential. Resection and thoracoplasty are two established measures. Follow-up is very important. Patients have good prospects of returning to work after surgery.

Reference

Surgical Treatment of Pulm. TB—Proceedings of the Seminar on T.B. and Chest Diseases, Srinagar, 1972—Papers by Basu Chaudhry S.K. and Dingley H.B.

Text Book on T.B. (1972) by Rao K.N.



All TB Clinics must have adequate facilities for diagnosis. Photo shows a Doctor at work in the Laboratory of the New Delhi T.B. Centre.