

# AN ANTERIOR RADICAL INTERVENTION IN THE SURGICAL TREATMENT OF THE VERTEBRAL TUBERCULOSIS

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An anterior radical surgery was performed on 33 cases with the establishment of Pott diagnosis at the Dept. of Orthopaedics and Traumatology in the Istanbul Medical School of the Istanbul University, between 1988 and 1989. The youngest of these cases, 13 of whom were male and 20 female, was 2 years of age and the oldest 66. The localization of the lesion in these cases which were followed up for at least 8 months and at most for 4 years, with an average of 2.6 years, was as follows :

Thoracal 16  
 Thoracolumbar 9  
 Lumbar 8

In 7 cases preoperatively incomplete and in one case complete paraplegia were present. 7 of these cases were healed completely postoperatively. In one case, spasticity persisted in some muscles. In all cases, the clinical picture improved at the end of the first month and at the termination of 6 months, radiologically acceptable fusion developed. The procedure was considered to be a distinct treatment of choice which can be indicated.

Different methods and views are prevalent today as it was yesterday in the treatment of vertebral tuberculosis. While such authors as DICKSON, JONES, KONSTAM applied conservative treatment (5,9,13), other authors such as Hodgson, Bailey, Hsu, Chu, Arct, Yau, Kohli, Kirkaldy-Willis, Kondo and Yamada, Kemp, Goel advocated surgical treatment though of a different type (1,2,4,6,7,8,11,12). On the other hand authors like Winter and Tuli claim that it would be more appropriate to select the method of treatment as per the case rather than acting with a prejudice. Yet they seem to have greater tendency to apply surgical intervention more. Capainer and Roaf also share the same view. As surgical treatment, posterior fusion, costo transversectomy, posterolateral debridement, anterior debridement and anterior decompression+fusion applied.

In this report of ours we have attempted the results we have obtained through anterior resection + decompression and fusion method, which is one of the surgical intervention, and which is also referred to as anterior radical intervention or Hong Kong operation.

## MATERIAL, FINDINGS AND RESULTS

Our material consisted of 33 Pott cases who were operated on at the Dept. Of Orthopaedics and Trauma-

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tology in the Istanbul Medical School of the Istanbul University between 1988-1989. 13 of these cases were male and 20 female. In our cases, youngest patient was 2 years of age and the oldest 66, with a mean age of 31.2 years.

Age distribution in our cases was as follows:

Between	2-10 years of age	5 cases
Between	10-20 years of age	7 cases
Between	20-40 years of age	14 cases
Between	40-60 years of age	6 cases
Over	60 years of age	1 case
	Total	33 cases

Before cases applied to our clinic :

Chemotherapy + Rest were prescribed in 10 cases

Physical therapy + antirheumatic treatment were instituted in 15 cases.

Costotransversectomy was performed in 2 cases.

6 cases stated that they had received no treatment.

In preoperative examination, paraparesis was determined 7 cases and complete paraplegia in one case. Pott abscess was observed in the preoperative X-rays of 21 cases.

Lesion Levels	Num.of case	Lesion Levels	Num.of case
D <sub>5</sub> -D <sub>6</sub>	3	D <sub>8</sub> -L <sub>1</sub>	2
D <sub>6</sub> -D <sub>7</sub>	6	D <sub>11</sub> -L <sub>1</sub>	3
D <sub>9</sub>	1	D <sub>12</sub> -L <sub>1</sub>	3
D <sub>9</sub> -D <sub>10</sub>	2	L <sub>1</sub> -L <sub>1</sub>	2
D <sub>10</sub> -D <sub>11</sub>	2	L <sub>1</sub> -L <sub>3</sub>	3
D <sub>11</sub> -D <sub>12</sub>	2	L <sub>2</sub> -L <sub>3</sub>	2
D <sub>5</sub> -L <sub>1</sub>	1	L <sub>4</sub> -L <sub>5</sub>	1
Total : 33			

The lesion presented a topographic distribution of;

Thoracal	16 cases
Thoracolumbar	9 cases
Lumbar	8 cases

In all cases which manifested thoracal and thoracolumbar involvement, kyphotic angulation was determined. The preoperative assessment of the kyphotic angulation in 25 cases which was measured by the Konstam's method and which was effected as per Kaplan's classification was as follows :

Mild (up to 30 degrees)	2 cases
Moderate (30-60 degree)	16 cases
Severe (over 60 degree)	7 cases

As a surgical route of access, left transthoracic intervention applied in 16 cases which presented thoracal localization; left transthoracoabdominal intervention in 9 cases with thoracolumbar localization and left retroperitoneal intervention in 8 cases which manifested lumbar localization.

Our cases were followed up with a minimum of 8 months, and a maximum of 4 years, with an average of 2.6 years.

Operative findings:

In 21 cases there was Pott's abscess,

In 8 cases which presented paraplegia and paraparesis, intramedullary abscess and caseated tissue remnants,

In 2 cases, abscess in the diaphragmatic leaflets and in the left renal lodge,

In 1 case, the osteomyelitis in 7th, 8th and 9th co-sae,

In 6 cases, there was pleural adhesion and pulmonary necrotic region.

Complications :

In 2 cases bronchopneumonia, in 1 case atelectasis, and in 2 cases ileus were developed. All were corrected with adequate treatment.

No neurological complication was encountered with in any of our cases.

In 18 cases, the costa removed was used as graft, and in 15 cases costa + iliac graft was applied.

Our cases were immobilized for 4 weeks postoperatively in plaster bed. 4 weeks later, plaster-Jacket was applied and they were kept in it for an average of 3 months. In cases which showed radiologically adequate amount of callus, rigid corset was applied after removing plaster jacket at the end of this period. The corset was employed for about 3 months. At the termination of this period, generally an adequate amount of callus and fusion developed. In these cases corset was discarded after giving paraspinal and abdominal muscle exer-

cises alternatively. The kyphotic angle of the patients was decreased postoperatively at a minimum degree of 5, and at a maximum degree of 32 with an average of 10 degree. At follow-up, no significant loss of correction was determined in the cases.

## DISCUSSION :

There is still great controversy nowadays regarding the procedures applied in the treatment of Pott's disease, so much so that different views are stated as to whether antituberculous medication administered in conservative treatment should be applied in double or triple form and whether it is necessary to have immobilization during this period of therapy (14,15,16). The indications of surgical treatment its type and timing are most debated subjects. Dickson, Jones and Konstam believe that conservative treatment yields excellent results even cases in which paraplegia has developed and that there doesn't seem to be any necessity for surgical therapy (5,9,13). A radical group especially led by Hodgson, states that surgical treatment provides a definite solution in spinal tuberculosis-at what ever stage it is (2,7,8). The preferential method suggested by this group, also referred to as Hong Kong group, is anterior radical intervention. While Roaf and Capencr have advocated costotransversectomy and abscess drainage and debridement in contrast, Kohli, Goel, Kemp, Kirkaldy, Willis, and Chu have stressed that due to sufficiently visible area, no adequate debridement would be maintained, so that debridement should be carried out through anterior approach (4,10,11). However, ARCT has emphasized the fact that the surgical technique to applied might be different in every case and that any one of the techniques from anterior radical intervention to costotransversectomy may be applied (1). Although with a more flexible view Winter and Tuli feel that one might retain conservative treatment when necessary and that all procedures including anterior radical intervention might be considered as a method of choice. When necessary Winter has indicated that he carried out surgical treatment more than the other methods (19).

In our opinion, it is a mistake to follow a rigid attitude in manifesting a preference for the treatment of vertebral tuberculosis, we believe that conservative treatment should be instituted in early cases in which there is little spinal destruction, and in cases over 60 years of age with no neurologic findings although it has great spinal destruction. Conservative treatment frequently yields encouraging results. Yet surgical

treatment is indicated in cases in which there is destruction in more than 2 vertebrae or in these cases in which severe kyphosis has developed due to excessive collapse though it has destruction in one or two vertebrae. For even though these cases improve through conservative way, a mechanic instability should be taken into consideration as the physiological balance of the spine will be considerably impaired at sagittal plane. However in cases with neurologic findings it is our belief that there is no need to hesitate for indicating surgery.

As for the type of surgical treatment to be applied, this seems to arise from different individual experience. As stated above, in a case in which surgery is indicated due to the existence of destruction in more than 2 vertebrae, or the presence of collapse, which leads to severe kyphosis in one or two vertebrae, or the existence of neurological findings due to compression, on the medullary canal resulting from various reasons, it is possible to correct the above mentioned deformity partially or completely only through anterior radical intervention. In addition, with anterior radical intervention, it is possible to correct the existing kyphosis and to maintain the correction obtained. Thus, in the reports which discuss the results obtained by various methods of treatment this point is clearly expressed by the medical research council working party which deals with the treatment of spinal tuberculosis.

Accordingly, it is reported that % 96 of fusion is provided by anterior radical intervention at the shortest period of time possible, and that there is only a % 2 of loss in the correction obtained in kyphosis followed up for, say 10 years (14,15,16). Yet in case the patients general condition or his age is not suitable for such a major intervention, drainage and partial debridement through a posterolateral intervention may be justified. Laminectomy has no place in the surgical treatment of Pott's disease except these three classic indications. This method is even completely contraindicated since it will cause the spinal system to be unstable as when it is applied in burst fracture.

#### REFERENCES :

1. Arct, W.: Operative treatment of tuberculosis of the spine in old people. *The J. Bone and Joint Surg.* 50-A:2, 255-267, 1968.
2. Bailey, H.L., Sister-Mary Gabriel: Tuberculosis of the spine in children. *The J. Bone Joint Surg.*, 54-A:8, 1633-1657, 1972.
3. Capener, N. : Vertebral tuberculosis and paraplegia. Editorials and annotations. *The J. Bone Joint Surg.*, 49-B, 605-606, 1967.
4. Chu, C.B.: Treatment of spinal tuberculosis in Korea, using focal debridement and interbody fusion. *Clin. Orthop.* 50, 235-253, 1967.
5. Dickson, J.A.S.: Spinal tuberculosis in Nigerian children. *The J. Bone Joint Surg.*, 49-B, 682-694, 1967.
6. Goel, M.K.: Treatment of Pott's paraplegia by operation. *The J. Bone Joint Surg.*, 49-B, 647-681, 1967.
7. Hodgson, A.R., Stock, F.E. : Anterior spinal fusion: The operative approach and pathological findings in 412 patients with Pott's disease of the spine. *The British Journal of Surgery.*, 48: 172-177, 1960.
8. Hsu, L.C.S., Yau, A.C.M.C, Hodgson, A.R.: Tuberculosis of the spine. *Ewatts*. Vol. 4, ch.6, 153-168, 1984.
9. Jones, B.S.: Pott's paraplegia in the Nigerian. *The J. Bone Joint Surg.* 40-B, 16-25, 1958.
10. Kemp, H.B.S., Jackson, J.D. : Anterior fusion of the spine for infective lesions in adults. *The J. Bone Joint Surg.* 55-B, 715-734, 1973.
11. Kohli, S.B. : Radical surgical approach to the spinal tuberculosis. *The J. Bone Joint Surg.*, 49-B, 668-673, 1967.
12. Kondo, E., Yamada, K.: End results of focal debridement in bone and joint tuberculosis and its indications. *The J. Bone Joint Surg.*, 39-A, 27-31, 1957.
13. Konstam, F.G., Konstam, S.T. : Spinal tuberculosis in Southern Nigeria. *The J. Bone Joint Surg.*, 40-B, 26-32, 1958.
14. Medical Research Council Working Party on Tuberculosis of the Spine. Fourth report. A controlled trial of anterior spinal fusion and debridement in the surgical management of tuberculosis of the spine in patients on standard chemotherapy : A study in Hong Kong. *The British journal of surgery*. Vol. 61, No. 11, 853, 866, 1974.
15. Medical Research Council Working Party on Tuberculosis of the Spine. Five-year assessment of controlled trials of ambulatory treatment, debridement and anterior spinal fusion in the management of tuberculosis of the spine. *The J. Bone Joint Surg.* 60-B, 163-177, 1978.
16. Roaf, R.: Tuberculosis of the spine. Editorials. *The J. Bone Joint Surg.*, 40-B, 3-5, 1958.
17. Tachdjian, M.o.: *Pediatric Orthopedics*. Volume I., 686-693, 1972. W.B. Saunders Company.
18. Tuli, S.M. : Results of treatment of spinal tuberculosis by "Middle path" regime. *The J. Bone Joint Surg.* 57-B, 13-23, 1975.
19. Winter, R.B. : Tuberculosis. *Moe's textbook of scoliosis and other spinal deformities*. Second Edition, W.B. Saunders Company. 568-576, 1987.